Telephony

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October 10, 1936

National Convention Arrangements Presage Record Meeting

WITH THE national convention of the Independent telephone industry only a few days away, officers of the United States Independent Telephone Association have completed the program and arrangements for, it is anticipated, one of the best conventions in the history of the industry. The meetings will be held at the Stevens Hotel, Chicago, beginning on Tuesday, October 13, and concluding on Friday morning, October 16.

The program is arranged so that persons in the accounting, commercial, traffic, and engineering branches of the Independent industry will find something applicable to their particular work, as well as of general interest to them.

Traffic, Plant, Accounting, Commercial Conferences

This year the division conferences, which for a number of years provided opportunity for exchange of ideas and opinions, are again a feature of the convention. There will be two sessions of division conferences, one on the morning of Wednesday, October 14, and the other on the following morning.

W. N. McAnge, Jr., Bristol, Tenn., president of the Inter-Mountain Telephone Co., will preside at the first conference of the commercial division on Wednesday morning. A discussion of the procedure being followed in applying the old age pension and unemployment insurance act in Wisconsin will be presented by H. Herman Rauch of the Wisconsin Industrial Commission.

Mr. Rauch will give details of the practical application of the act to Wisconsin companies. This covers setting up the necessary items on companies' books to enable the commission to check them, preparatory to payment of the tax in January.

As other states have adopted laws similar to the Federal Social Security Act, telephone companies besides those in Wisconsin are necessarily interested in the procedure which has been worked out in Wisconsin.

The second session of the commercial division on Thursday morning will have round-table discussions relating to commercial matters especially in connection with regaining telephones. H. F. McCulla, Lincoln, Neb., commercial superintendent of the Lincoln Telephone & Telegraph Co., will act as chairman of the session.

The first session of the plant division will discuss the technical side of the discussion of electric lines in the rural districts. Special attention will be paid to the use of multi-ground neutrals in electric line construction, which is being urged by the power companies.

The second session of the plant division on Thursday morning will be devoted to round-table discussions of new construction methods, the latest types of exchanges, developments in telephone equipment, etc. The conferences will be in charge of A. L. Stadermann, chief engineer, Citizens Independent Telephone Co., Terre Haute, Ind.

The traffic conference on Wednesday morning will be in charge of Chas. C. Deering, Des Moines, Iowa, secretary of the United States Independent Telephone Association. At the second session on Thursday morning, R. S. Brewster, Lincoln, Neb., traffic superintendent, Lincoln Telephone & Telegraph Co., will act as chairman. The topics to be considered in the round-table discussions will include the new toll operating practices, training of operators, voice training, and other topics which may be suggested.

The first session of the accounting conference will be in charge of Ranford Dunlap, Kansas City, Mo., general auditor, Telephone Bond & Share Co. The second session on Thursday morning will be in charge of C. E. Archer, Tampa, Fla., general auditor, Peninsular Telephone Co.

The round-table discussions of this division will include "Federal and State Accounting," "Accounting for Taxes," "Payroll Accounting Under Federal and State Social Security Acts," etc.

"Voice Training" for Joint Divisions' Conference

At the conclusion of the division conferences on Wednesday morning there will be a joint session of all of the divisions. At this session "Telephone Doors," a demonstration of the value of voice training in the use of the telephone, will be presented by Miss Mildred Adams, voice instructress of the Lincoln Telephone & Telegraph Co., Lincoln, Neb. This demonstration is one in which everyone should be interested.

There will be four general sessions of the convention, the first being held on Tuesday afternoon, October 13. At this session the officers will present their reports and statements. These will be given by Secretary-Treasurer Chas. C. Deering, Des Moines, Iowa;

NATIONAL CONVENTION EXHIBITORS

	Room No.
Albertson Electric Co	2525
American Automatic Electric Sales Co	2504-2508
W. M. Bashlin, Inc	2563
L. M. Berry & Co	2515
Buckeye Telephone & Supply Co	2552
The Burgess Industries	Hall between 2535-2536
A. B. Chance Co	2553
Churchill Cabinet Co	Lobby
Coffing Hoist Co	2554
Cook Electric Co	2510
Cuneo Press, Inc.	2559
Do More Chair Co	2560
R. R. Donnelley & Sons Co	2521
Electric Products Co	2536
Electric Storage Battery Co	2516
Everstick Anchor Co	2529
Fansteel Metallurgical Corp	2538
Fernand De Gueldre Studios	2565
Gould Storage Battery Corp	2561
Guardian Electric Mfg. Co	2541
Gustav Hirsch Organization	2515
Holtzer-Cabot Electric Co	2527
Illinois Testing Laboratories, Inc	2547
Inland Equipment Co	2512
J. K. Johnston	2558
James R. Kearney Corp	2543
Kellogg Switchboard & Supply Co	2500-2502
Leich Electric Co	2503
Lenz Electric Mfg. Co	2517
Loomis Advertising Co	2562
Lorain Products Corp	2537
National Carbon Co.	2509
National Telephone Supply Co	2526
North Electric Mfg. Co	2522, 2523, 2557
Page & Hill Co	2531
Philco Radio & Television Corp	2544-2545
Postal Telegraph & Cable Co	2524
Ray-O-Vac Co.	2556
Raytheon Mfg. Co	2542
Reliable Electric Co	2501-A, 2502-A
John A. Roebling's Sons Co	2530
Runzel Cord & Wire Co	2514
Schauer Machine Co.	2532
Seymour Smith & Son, Inc	2549
Signaphone Corp. of America	2550
Stromberg-Carlson Telephone Mfg. Co	2518-2520
Suttle Equipment Co.	2555
Telephonads	2527
Telephone Engineer Publishing Co	2511
TELEPHONY PUBLISHING CORP	2513
Templeton, Kenly & Co	2546
The Telephone Repair Shop	2538
United States Steel Corp	2551
Wisconsin Cuneo Press	2559
Yale & Towne Mfg. Co	2548

General Attorney Alfred L. Geiger, Washington, D. C.; and President F. B. MacKinnon, Chicago. Those attending this session will obtain an excellent idea of the condition of the industry, in addition to the work which the association has performed for the benefit of its member companies.

Discussion by Economists of Present Prosperity

On Wednesday afternoon the general session will be given over to a discussion by Dr. David Friday, economist, Washington, D. C., and Dr. S. H. Nerlove, Chicago, associate professor of business economics, University of Chicago. The topic of the discussion will be "Is This Prosperity Real? Can It Last Without Planning?" That is a subject in which all telephone people undoubtedly have an interest.

Preceding this discussion, the election of directors will be held and the reports of committees will be received. The 11 directors whose terms expire with this convention are:

Frank S. Barnes, Rock Hill, S. C.; John P. Boylan, Rochester, N. Y.; J. G. Crane, Kansas City, Mo.; P. M. Ferguson, Mankato, Minn.; W. F. Goodrich, La Crosse, Wis.; H. L. Harris, Chicago, Ill.; C. L. Jones, Athens, Ohio; Frank A. Knapp, Bellevue, Ohio; J. Y. Rust, San Angelo, Texas; K. B. Schotte, Kittanning, Pa.; and A. Wardman, Whittier, Calif.

On Thursday afternoon, a demonstration and explanation of experiments in radio television will be presented. For several years these experiments have been carried on by the electrical engineering department of Purdue University, Lafayette, Ind. Dr. C. Francis Harding, head of the School of Electrical Engineering, and Prof. R. H. George will present the demonstration and give the explanations.

Originally this discussion of television was programmed for the plant division conference but the announcement that it would be given created so much interest that it was decided to present it at a general session of the convention.

The fourth and concluding general session will be held on Friday morning. At this session the report of the association's committee on Bell special services (teletypewriter, timed wire, etc.) will be presented by Chairman Louis Pitcher, Dixon, Ill., general manager of Dixon Home Telephone Co. C. C. Deering, of Des Moines, will present a discussion of procedures in connection with rural electrification. The balance of the session will be given over to a general forum, to discuss questions which may be brought up.

The annual meeting of state association executives will be held Tuesday evening, commencing with a dinner. The general topic at this meeting will be "What Do You Do?" In addition to the executives of the state associations the representatives of telephone companies serving on the boards of directors of various associations have also been invited.

Independent Pioneers' Meeting, Entertainment

On Thursday afternoon the annual meeting of the Independent Pioneer Telephone Association of the United States will be held. At this time the reports of President Chas. A. Rolfe, Beverly Hills, Calif., and Secretary-Treasurer J. K. Johnston of Indianapolis, Ind., will be given. Reports of various committees of the association will likewise be given. There also will be discussions of future activities of the association and the election of officers will close the session.

The annual dinner and entertainment of the organization, which is the social feature of Independent Convention Week, will take place on Thursday evening. Announcement

United States Independent Telephone Association

FORTIETH ANNUAL CONVENTION PROGRAM

OCTOBER 13 10:00 A. M. DIRECTORS' MEETING.

2:00 P. M. GENERAL SESSION: Statements by Secretary Chas. C. Deering, General Attorney Alfred L. Geiger and President F. B. MacKinnon. Appointment of Committees.

6:30 P. M. DINNER AND MEETING OF STATE ASSOCIATION EXECUTIVES. General topic for discussion, "What Do You Do?"

OCTOBER 14 9:30 A. M. DIVISION CONFERENCES.

Accounting, Chairman, Ranford Dunlap, General Auditor, Telephone Bond & Share Co., Kansas City, Mo. Round Table Discussions: "Federal and State Accounting," "Accounting for Taxes," "Payroll Accounting Under Federal and State Social Security Acts," etc.

Commercial, Chairman, W. N. McAnge, Jr., President, Inter-Mountain Telephone Co., Bristol, Tenn. Discussion of procedure being followed in applying Old Age Pension and Unemployment Insurance laws. Principal speaker: H. H. Rauch of Wisconsin Industrial Commission.

Plant, Chairman, A. L. Stadermann, Chief Engineer, Citizens Independent Telephone Co., Terre Haute, Ind. Discussion of electric lines in the rural districts, with special attention to the use of multi-ground neutrals in electric line construction.

Traffic, Chairman, Chas. C. Deering, Secretary, United States Independent Telephone Association, Des Moines, Iowa. Round Table Discussions: "The New Toll Operating Practices," "Training Operators," "Voice Training," etc.

2:00 P. M. GENERAL SESSION: Reports of Committees. Election of Directors.

Discussion by Dr. David Friday, Economist, Washington, D. C., and Dr. S. H. Nerlove, Associate Professor of Business Economics, University of Chicago. Topic: "Is This Prosperity Real? Can It Last Without Planning?"

4:00 P. M. DIRECTORS' MEETING.

OCTOBER 15 9:30 A. M. DIVISION CONFERENCES.

Accounting, Chairman, C. E. Archer, General Auditor, Peninsular Telephone Co., Tampa, Fla. Round Table Discussions Continued.

Commercial, Chairman, H. F. McCulla, Commercial Superintendent, Lincoln (Neb.) Telephone & Telegraph Co. Round Table Discussions: "Holding Present Business," "Recovering Lost Business," "Generating New Business."

Plant, Chairman, A. L. Stadermann, Terre Haute, Ind. Round Table Discussions—"New Construction Methods," "Latest Types of Exchanges," "Developments in Equipment," etc.

Traffic, Chairman, R. S. Brewster, Traffic Superintendent, Lincoln Telephone & Telegraph Co., Lincoln, Neb. Continuation of Round Table Discussions.

2:00 P. M. GENERAL SESSION: "Experiments in Radio Television" explained and demonstrated by Dr. C. Francis Harding, Head of School of Electrical Engineering, Purdue University.

4:00 P. M. BUSINESS MEETING OF INDEPENDENT PIONEER TELEPHONE ASSOCIATION AND ELECTION OF OFFICERS.

7:00 P. M. INDEPENDENT PIONEERS' BANQUET, "EVENING AT A NIGHT CLUB," during a "Cruise to the Tropics."

OCTOBER 16 9:30 A. M. GENERAL SESSION: Report of Committee on Bell Special Services (teletypewriter, timed wire, etc.) **by Chairman Louis Pitcher, General Manager, Dixon (Ill.) Home Telephone Co. Discussion of Procedures in Connection With Rural Electrification, Lead by Secretary Chas. C. Deering. General Forum.**

STEVENS HOTEL, CHICAGO

MANUFACTURERS' HEADQUARTERS—25TH FLOOR

and details of this have previously been given in TELEPHONY.

The regular sessions of the convention will be held in the Tower Room, of Hotel Stevens, as in the past several years. The division conferences will occupy rooms on the third floor. The exhibits of the manufacturers — reservations for which, on October 7, had reached a total of 55 to set a new record—will be on the 25th floor, as will also be the registration desk.

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"Public Service" Makes Its Debut as House Organ

Published monthly in the interests of the employes of the Central Electric & Telephone Co., and subsidiaries, and the Central West Public Service Co., of Sioux City, Iowa, "Public Service" made its debut with the July number.

The issues contain 22 pages, approximately 8½ ins. by 11 ins. in size, of news of interest and concern to the employes and executives of these companies. The progress in a recent telephone sales campaign is recorded in these magazines. The August issue reports that the Parker, S. D., district, of which Ed Samp is manager, won the trophy, gaining 214.5 per cent of its quota during the campaign.

The North Dakota exchanges won first place in the collection roll of honor for July, with an average of 10.52 per cent of uncollected accounts. Bantry, Gilby and Webster exchanges, all had a perfect record, with no accounts outstanding and uncollected.

The Operators' Corner

By MRS. MAYME WORKMAN

Traffic Supervisor, The Illinois Telephone Association, Springfield, Ill.

DO YOU SLEEP when the wind blows? Read the article reprinted in this series and learn how this can be accomplished. Series No. 260

AN INTERESTING article entitled, "Sleep When the Wind Blows" appeared in the editorial of the September issue of the Bell Telephone News, employes' magazine of the Illinois Bell Telephone Co. It states that the following story was told in a recent talk on the Ford Sunday evening radio hour by W. J. Cameron of the Ford Motor Co.:

"Farmer White, searching for a boy to work on his farm, finally hired one after this conversation had taken place:

" 'Well, young fellow,' said Farmer White, 'and what is your name?' 'John, sir.' 'And what do you do?' 'I work on a farm, sir.' 'Do you know anything at all about farming?' 'If you please, sir, I know how to sleep on a windy night.' 'You what?' 'I know how to sleep on a windy night, sir.' 'Well, that's no great recommendation,' said Farmer White. 'Most of my men can do that only too well now!' "

Finally, however, he hired the boy. But let Mr. Cameron tell the story:

"John worked away for several weeks, not much noticed—and that isn't a bad sign either. When anything is working well, it isn't much noticed. And then one night the wind woke up. It gathered itself in great gusts on the hills, and sent the clouds scurrying across the sky, and roared through the forest, and hammered against the buildings, and tore at the haystack, and howled down the chimneys.

"When Farmer White heard it, he sat straight up in bed. He knew that wind. Many times it had wrenched doors off his barns, and scattered his hay and bowled over his chicken coops. So he jumped out of bed and shouted for John. Now, John was sleeping in the attic. 'John!' the farmer called, but never an answer. 'John!' he shouted louder than the wind, but no word from John. So the farmer bounded up to the attic and shook John and shook him! 'Now, John my lad, get up; the wind's taking everything.' But John lay like a log—he never moved.

"So Farmer White rushed out into the wild night, expecting to see everything tumbled about. But he found the stable doors safely fastened, the horses safely tethered, the windows firmly locked, and the cattle all snug in their stalls. He found the stack yard intact—the stacks well roped and the ropes well pegged. He found the pig sty secure and the chicken coops firm, the wind tearing fiercely around them all the time. Then Farmer White laughed out loud—it came to him all of a sudden just what John had meant. Do *you* know what he meant?"

"Telephone people understand John's simple philosophy, for they do their everyday work with the thought that 'some night the wind will blow.' And when the wind does blow, or floods come, or fire, or disaster of any sort, telephone people and telephone plant are ready for the emergency. Not invulnerable always, as the 1936 flood showed, but prepared to the best of human ingenuity, both to combat disaster and to make rapid recovery."

COMING CONVENTIONS

United States Independent Telephone Association, Hotel Stevens, Chicago, October 13, 14, 15 and 16.

Independent Pioneer Telephone Association of the United States, Hotel Stevens, Chicago, October 15.

The Canadian Independent Telephone Association, King Edward Hotel, Toronto, October 21 and 22.

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 11 and 12, 1937.

Questions from Illinois Operators

1. When a call is placed for a certain department in a business office and the office answers but the department is "DA," is there a report charge?
2. Can you hold the line on a "BY" number on a direct circuit?
3. Does an NRG report take a report charge if you don't leave word?
4. On a person-to-person call do you give a report to the calling party, if he is calling from a post pay telephone, before you ask for the report charge or after giving the report?
5. What is the correct phrase to use when you call a nearby and ask them to call some one to the telephone?

The answers to these traffic questions are given on page 39.

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Canadian Convention Set for October

The Canadian Independent Telephone Association, of which Alph Hoover is secretary, announces its annual convention will be held on October 21 and 22 at the King Edward Hotel in Toronto. Among other features on the program, the new "traffic agreement" with the Bell Telephone Co. of Canada—just completed by the Bell relations committee of the Canadian association—will be tabled and explained at the convention.

The Winch Method of Pipe Pushing

By RAY BLAIN

PLACING pipe conduit underground without necessity of breaking into pavement or digging tunnels. Displacement and compression of soil by pilot on pipe is key to this method of pipe pushing, the power being furnished by means of a winch on a line construction truck

IN THE construction of ducts for underground telephone cable system it is often advantageous to push sections of pipe under streets, railroad tracks and lawns, to carry lateral cables. Pipe conduit placed in this manner avoids the necessity of removing and replacing pavement and the danger and expense of digging tunnels. Despite the opinions of many construction men to the contrary, pipe may be pushed accurately and easily if proper equipment is provided.

A good grade of pipe should always be used and usually 1½ or 2-inch will be sufficiently large for lateral cables, although larger sizes may be pushed if necessary. It is seldom that pipe larger than three inches in diameter will be required for underground cable. Ordinary wrought iron pipe, galvanized or plain, is used, and good threaded couplings should always be provided. The inner edges should be reamed to prevent injury to lead covered cable.

Water will gradually accumulate in conduit and drainage of some kind should be provided. If water is permitted to accumulate in a pipe conduit in sections of the country subjected to sub-zero temperatures, freezing often flattens the cable in a manner as to cause its total failure. When a pipe lateral cannot be drained into a manhole, it may be necessary to provide a drainage pocket or sump to keep the conduit dry.

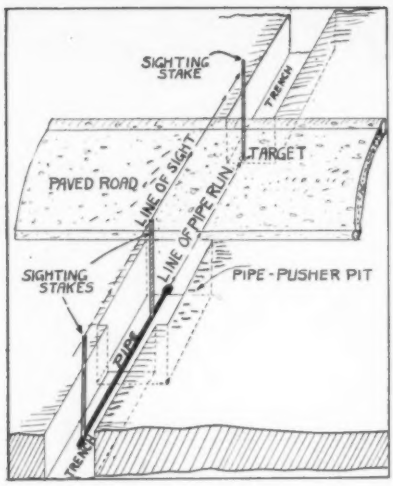
The end of the pipe to be pushed through the ground must always be equipped with a suitable pilot. If the pipe is the two-inch size, it should be provided with a 2-to-1-inch reducer with a plug screwed into the one-inch opening. This type pilot will be found entirely satisfactory and more accurate than a sharp point, which always has a tendency to wander.

The only secret in connection with successful pipe pushing is one of displacement and compression of the soil by the pilot, and the soils best suited for this action are clay and loam. It is impossible to compress pure sand. The force required to push pipe into sandy soils depends upon the amount of pure sand contained in the soil.

When soil consists entirely of fine dry sand or gravel, it is impossible to displace it unless the pipe is near the surface of the ground or near a layer of clay which will compress to permit displacement of the sand or gravel. Rock, concrete or other solid formations cannot be penetrated by a pipe regardless of the force applied.

A regular pipe-pushing machine is ordinarily used to drive a pipe, but recently a system has been devised to make use of the power winch on a line construction truck for the pur-

View to Left Shows Pipe Being Pushed by Means of the Winch Method; the Truck Furnishing the Power Is Seen in the Background. The Other Illustration Shows Another View of the Application of This Method of Pipe Pushing.



Method of Sighting in Order to Push Pipe Accurately Under a Paved Street.

pose. Sometimes pipes are driven with hand sledges or forced into the earth with screw-type jacks. The new winch method presents many advantages over most of these older methods of pipe pushing.

To set a regular pipe-pushing machine, a trench two or three feet wide must be dug, whereas with the winch method a ditch one foot wide is usually sufficient. About four workmen are necessary with the pipe pusher and only two with the winch method, one of which is the truck driver. Pipe can also be pushed just as accurately and much more rapidly with the winch.

To set-up for the winch method, the trench should be dug about 12 feet long and in line with the proposed direction of the pipe. The trench should be a few inches deeper than the depth at which the pipe is to be pushed. Near the point where the pipe is to enter the ground, excavate a cross trench large enough to accommodate a timber about 8 inches by 8 inches by 5 feet. This cross trench should be about six inches deeper than the pipe trench.

The cross timber should be equipped with two permanently-mounted pulleys, or two ordinary snatch blocks and eye bolts may be used. A guide for the pipe should be placed on the top and directly in the center of this timber.

The line from the winch should first be threaded through one puiley on the cross timber, through a snatch block hooked into the end of the pipe, back through the other pulley on the cross timber, and to the end of the pipe, where it is anchored with a hook. This arrangement will provide sufficient leverage to permit pushing a pipe into any soil that can be compressed without overloading either the winch or the motor of the truck.

To prevent injury by the hooks on the snatch blocks and the line to the threads on the pipe being pushed, a short section of pipe about 18 inches long should be coupled to the end of the pipe each time a new section is added. This short section also permits removal of the cross timber without digging when the last section of pipe has been pushed in place.

Ordinarily 10-foot sections of pipe will prove more desirable for use with the winch method of pipe pushing, although 20-foot sections can be used if desired. Good threads on both the pipe and the couplings should be provided.

This method of pipe pushing has proved quite accurate and, unless obstructions are encountered, the pilot should not be more than a few inches from the intended location at the end

The Cross Timber, Showing Pulleys Mounted Permanently.

of a 50-foot travel. If the pipe being pushed is properly aligned for the first three feet, it will usually follow the point straight, even though the rear end of the pipe is not kept in direct line. Giving the pipe a half turn occasionally with a pipe wrench will also help to keep it in a straight line.

When the pipe is aligned for pushing, the rear end should be raised to the proper height by filling under it with loose earth. To sight the pipe accurately, secure three sticks of equal length to use as sighting rods. Dig a hole to the proper depth and erect one rod at the end of the proposed run. Hold the other two rods vertical, one at the front and the other at the rear end of the pipe to be pushed.

Sight and level the tops of the three rods, and the bottom of the rod at the end of the proposed run will indicate approximately where the pipe should arrive.

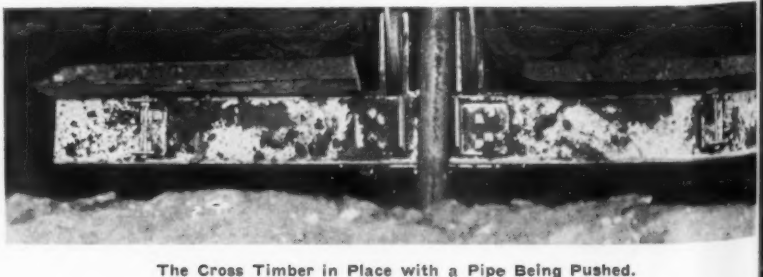
When pushing a section of pipe longer than 50 feet it is generally desirable to dig a short cross trench each 20 to 30 feet, if possible, in the path of the pipe to make sure that it is following the correct line. If any correction is necessary, the route of the pipe may be varied by prying the pipe in the proper direction with a bar as it enters the other side of the test trench.

These test trenches, of course, can not be easily dug in pavement although few paved streets will be encountered over 50 feet wide. It is frequently necessary to push a pipe under a lawn where it is impossible to excavate the full length, but permission can be obtained to dig the small test trenches.

The winch method of pipe pushing presents no great element of danger if ordinary safety precautions are observed. The different sections of pipe should be screwed well into the couplings to prevent buckling of the pipe at the joints while under strain. The short 18-inch section, which carries the snatch block and hook, should always be screwed down tight to prevent it breaking off under heavy strain.

The truck operator can easily determine whether the winch is being overloaded or not as the pull on the motor is not excessive unless an obstruction is encountered. When a solid obstruction is hit suddenly with the pipe, the truck motor is usually stalled.

The rear wheels of the truck should be well blocked before starting a pipe pull. Men should always be cautioned to keep at least ten feet from the winch line during a hard pull. The winch should be stopped when the snatch block comes within about a



The Cross Timber in Place with a Pipe Being Pushed.

foot of the cross timber, to prevent bending the pipe.

Precautions should always be taken when pushing pipe to clear all water and gas mains; also sewers and drains. If drawings cannot be obtained which indicate the position of the underground utilities, their approximate location can generally be closely calculated from a study of manholes, fire plugs, cut-off valves.

Natural obstructions, such as small rocks and tree roots, can generally be pushed aside without changing the direction of the pipe appreciably. Sometimes large rocks or other solid obstructions, such as old foundations, are encountered which entirely stops the pipe. In all such cases the winch line can be used to pull the pipe out of the ground and a new start taken.

I do not intend to infer that pipe-pushing machines are not satisfactory, for large numbers of them are in daily use and giving perfect satisfaction. The power winch, however, is always on the job and, if used in the manner here described, we are sure it will provide a most satisfactory method of pipe pushing.

Plant Men "Swap" Ideas

The Uneventful Life of a Trouble-Shooter

By Doc

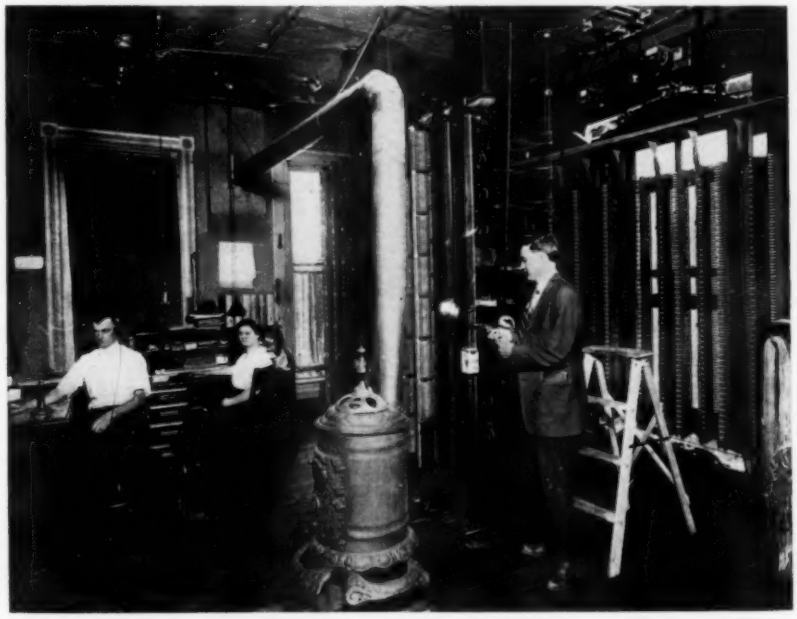
The most fascinating, and at the same time the most disagreeable job I ever had was, I believe, that of holding down a local and toll desk set in a medium-sized exchange. Besides testing, I shot most of the switchboard trouble and ran jumpers for two crews of installers. My work always came in bunches, like bananas. At other times I had practically nothing to do for hours except to amuse myself polishing plugs or cutting back switchboard cords.

Each week-day morning I arrived at the office not later than seven o'clock and my first task was to test all toll lines. Then I tested all local trouble which had accumulated during the night and made out a route sheet for the local trouble-shooters. Next, I took readings of the electrolyte of storage batteries and changed the ringing machines. The mercury-arc rectifier was then started. This was not always a simple task for, in the old days, the rectifiers were more tempermental on a cold morning than a cable-splicer.

That job done, I assigned cable pairs to all work orders, and when the rest of the crew arrived at about eight o'clock I was all ready for them. On mornings when I had toll-line trouble I would often get stuck on a case that was difficult and be forced to do this routine work as best I could when I had the time.

When the trouble-shooters and installers got out on the job my work really started. Perhaps it would be necessary to change a cable pair for a trouble-shooter and just when I started on it an installer would call in and state that his pair assignment was from the wrong cable terminal and must be changed. Then some neighboring exchange would call in and want a test on a toll line, and again some farm-line bug-hunter would call in for advice and sympathy concerning some difficult trouble he was experiencing.

My instructions were to keep everyone contented at all times although I could not have possibly done this had I been triplets. We used a small gas furnace to heat our soldering irons and many is the time I have burned them up for they were forgotten as I worked busily on the test board.



In This Photograph of the "Days of Long Ago" DOC Is Shown on the Left Seated at the Toll Test Desk in a Medium Sized Telephone Exchange.

Although difficult and annoying at times, this job was truly interesting; I believe all jobs are when one is kept alert, both mentally and physically.

In the natural course of events I finally left this exchange and for about ten years moved around the world considerably. Then one day I happened near the old town so stopped off between trains. I wanted to see what changes had taken place in the exchange and was due for quite a surprise. I had seen the changing world, and had even changed myself, but the old exchange—even to the spot of missing plaster on the ceiling—was just the same as the day I left it.

I really don't know which is the greater disappointment—to come back after a period of years and find everything changed or no changes at all. Telephone exchanges are always more or less that way, for they usually remain the same for years, without even a face lifting, and when a change does take place, it is complete in every way.

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Conserving Timber by Long Span Construction

Experiments conducted by the engineers of the Bell Telephone Co. of Pennsylvania and the American Telephone & Telegraph Co. have demonstrated that poles may be placed further apart than has been the custom

for many years, without affecting the service value of the line. The result will be lowered construction costs as well as a big step in conservation of timber, according to The Telephone News.

Almost since the inception of the industry, the accepted span length for .104 copper and .109 iron wire has been approximately 130 feet; in other words, 40 poles to the mile, on an average. With the coming of toll cable lines, however, with long stretches in the open, it was found that spans could be increased above the usually-accepted limits without affecting the service value of the line.

During the past year several cable lines have been built in Pennsylvania with pole span lengths ranging from 250 to 360 feet, with an appreciable saving in original construction costs. Maintenance costs are also expected to be lower since the tendency of cable to be under alternating tension and compression with temperature changes is thereby lessened. This alternation of tension is believed to be responsible for most cases of trouble caused by ring cuts near the poles.

In the construction of one section of new toll cable between Bellefonte and State College, Pa., the careful selection of high points permitted the use of spans as long as 345 feet and the replacement of 19 poles in the old line with five poles in the new span.

In many rural lines longer spans are also being used. For this purpose a stronger wire made of steel has been developed recently by the Bell Telephone Laboratories. Span lengths of 250 feet, instead of 150 to 200 feet, are being used.

The stress in strand supporting aerial cable of different weights and under varying temperatures may be computed with reasonable accuracy by formulae, as long as the strand does not exceed its elastic limit.

A suspended cord is a true catenary and that curve may be used for computations. However, parabolic formulae are much simpler and, within the range of telephone spans, are fairly accurate. Consequently, the derivation of equations for computing sags, tension, etc., are based on the parabola.

The strength of the strand is considered adequate if its elastic limit is not exceeded under storm loading conditions with the temperature at 0° F.

▼ ▼

"I Wonder Why" of a Telephone Engineer

By Ray Blain

"I Wonder Why" more thought has not been given to the proper covering of open manholes when cable-splicers are working in them during inclement weather?

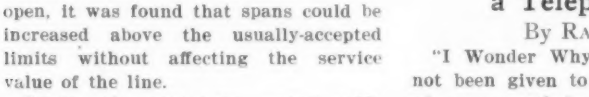
Many is the time I have known a splicer in a manhole to cease work for several hours due to a mild, drizzling rain.

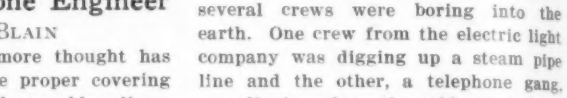
A splicer's tent of the type ordinarily used on aerial cable work is practically worthless for use on a manhole, for there is no practical method of covering the opening and at the same time providing adequate light and ventilation. Sometimes a canvas is draped over a manhole guard, but this is far from a satisfactory arrangement.

After trying every available means we have finally decided that a common storm window is the most desirable cover available, as it sheds the water and at the same time passes sufficient light for the cable splicer to carry on his work.

The storm window is light and, if handled with ordinary care, is not easily broken. Even though some of the glass panes are broken occasionally, they can be easily and quickly replaced at small cost. The window can be propped up at one end with a tool box to provide a water shed and ventilation.

When a small cable-splicing trailer, of the type shown in the illustration, is used, the window can be leaned against one end of it, making an ideal working arrangement. Added to all of this, while the average cable-splicer is not exactly a hot-house plant, he will enjoy working under this glass canopy.





Storm Sash Makes Satisfactory Covering for Manholes When Cable-Splicers Are Working in Them During Inclement Weather. It Sheds the Water and Permits a Larger Amount of Light to Pass Into Manhole.

▼ ▼

Steam Pipe Leak Causes Cable Trouble

A baffling case of trouble kept the street in front of the headquarters building of the Ohio Bell Telephone Co. in Cleveland torn up for several days while several crews were boring into the earth. One crew from the electric light company was digging up a steam pipe line and the other, a telephone gang, was digging along the cable conduit.

A rise in temperature in the cable vault and 80 permanent signals on the board at one time on August 18, told the telephone men that something was wrong. Forcing nitrogen gas along the cables temporarily brought the lines back in service, but they went out again later. Finally the diggers reached the hot spot. It literally was hot, so hot that the ground could not be handled within a radius of 25 feet of the source of the trouble.

Steam, leaking out of a small hole in the pipe line, had come in contact with the telephone conduit. The ground at that depth is sand, so the steam under a pressure of 250 pounds carried the sand with it. Hitting the wall of the telephone conduit, the effect was the same as sand blasting.

The whirling sand struck the telephone ducts at an upward angle, boring a hole through the outer wall, then striking the cable also at an angle, biting through the sheath, but not injuring the conductors.

The steam, of course, penetrated the cable for a considerable distance. As soon as the steam was shut off, condensation started, causing trouble throughout the cable.

The break in the telephone cable was located and temporary repairs made by the cable-splicing crew.

IN THE NATION'S CAPITAL

By FRANCIS X. WELCH,
Special Washington Correspondent for TELEPHONY

ONE OF the many interesting places in Washington where a visitor, fortunate enough to engage some hardworking government employe in casual conversation, may learn a great deal is the Bureau of Labor Statistics, which functions under the United States Department of Labor. Here are prepared many important surveys and statistical studies, including two of its more popularly known efforts—the periodical estimates on national employment, and the cost of living.

It was on an errand which had nothing at all to do with telephone matters that this correspondent dropped into the Bureau some weeks ago and had a chat with an efficient young woman who seemed to know more about prices than it is possible to imagine.

The cost-of-living studies, as you may know, result from constant observation of the cost of various commodities in 51 principal cities, strategically situated in all parts of the country, so as to reflect average living cost conditions as nearly as possible. Everything imaginable is sampled, from cabbages to King apples, and each passing commodity price is reflected in a new index figure.

THE INDEX figure is a percentage adjustment using the average price of that commodity during the year of 1913 or 1926 (both bases are used) as 100. Thus if the average price of stuffed case meat products (hot dogs to you) was 20 cents a pound in 1913 and now sell for 25 cents a pound, our present index would be 125.

When everything has thus been reduced to a common denominator, the Bureau expert dives into this sea of statistics and, after scientific weighting and balancing the relative importance of different commodities, he comes up with an "all commodity" index in his mouth. And that, my friends, is the figure that the economists, politicians and editors rave about. Just now it stands at 81 (1926 basis).

THIS MAY all seem elementary and somewhat boring to many TELEPHONY readers who have long made use of price indices for their own statistical purposes, but aside from that there is something new in the wind that should especially interest telephone men.

It is the rumor that the Bureau, under the dynamic leadership of its present commissioner, Isador Lubin, is turning over in its mind the feasibility of extending its commodity price index system so as to be able to present industrial figures on short notice for a variety of purposes, including property value appraisals.

Of course, a good many people will have to say "Yes," including President Roosevelt and possibly congressional appropriation committees, before such an expansive plan could be put into operation, but as one early bird to another, be on the lookout for such a shift-play if the New Deal gets an encore at the polls next month.

Just why the official statistical service of the United States should be thus expanded is a rather long story. Parts of it go back to the landmark decision of the United States Supreme Court in Chesapeake & Potomac Telephone Co. of Baltimore v. Public Service Commission of Maryland (TELEPHONY of June 8, 1935, page 7; 55 Sup. Ct. 894, 8 P. U. R. (N. S.) 433).

In that case, if you will recall, the Maryland commission, in order to avoid a costly and time-consuming nuts-and-bolts valuation of Maryland Bell properties, hunted around and found an old rate base fixed by the Federal courts back in 1923.

IT WAS a simple matter to bring this down to date by using general commodity price indices (modified to some extent by the commission's judgment). The company, it seems, agreed to take the short cut but balked at the use of the general commodity price indices. It said in effect to the commission:

"We didn't use ships and shoes and sealing wax in constructing our plant; we used wire and poles and switchboards. These are the unit costs that you should find out the price indices for, and use them—not general commodities."

But the Maryland commission observed that the only place it could get price indices for telephone plant units would be from a manufacturing field so dominated (in its opinion) by Bell's own Western Electric Co. that there was no open and complete market in which to find out "true" prices. The commission decided to stick to general commodity indices; and the company, as we all know, decided to go to court about it.

Before the highest court the commission's counsel eloquently argued that there was some sort of economic affinity between general commodity prices and telephone plant equipment prices, which was so close that purely characteristic differences would be negligible in amount over a long run. The wise justices heard and nodded; but when opinion day came around, six out of nine were from Missouri and the company won a rather elaborate version of a Scotch verdict.

NEEDLESS to say, the industrious experts at the Bureau of Labor Statistics took notice of this important decision and one or two of them decided that something should be done about it.

If definite industrial price indices were all that were lacking to permit the Maryland commission from streamlining the cumbersome utility valuation process, why shouldn't Uncle Sam's statistical experts get busy and have them on hand? Why should the Maryland commission or any other state or Federal regulatory body have to go to Western Electric or any other private industrial group for price figures?

WELL, THERE are many technical difficulties that would have to be cleared up before the Bureau could do such a job effectively, even if it should get the green light from the superior authorities. The hardest nut to crack would be the job of obtaining so-called "open market" price quotations without regard to, and independent of, the quotations of the "dominating industrial agency" in the field. Incidentally, that difficulty would be present in a good many fields besides telephone manufacturing.

But where there's a will there's a way. At this writing the whole idea is merely in the incubation stage, according to confidential reports given to your snooping correspondent. Overlooking these factual difficulties already outlined, here are a few points to keep in mind.

1. New attempts by state (and probably Federal) commissions to short-circuit the requirements of drawn-out rate valuations may confidently be expected.

2. It is not unlikely that some of these experimenting commissions will try again the path attempted unsuccessfully by the Maryland Public Service Commission and the Interstate Commerce Commission (see the O'Fallon case)—i. e., the use of commodity price indices of some kind or another.

3. If, as and when the commodity price index system is again attempted, it is a fair speculation that the United States Supreme Court (which is likely due for a change some time in the future and which turned down the Maryland commission in 1935 by a mere 6 to 3 decision) will finally decide to approve, or at least not to veto, this method of expediting rate regulation.

4. If, as and when the United States Supreme Court does allow the regulatory commissions to use commodity price indices in rate fixing, there would be a sudden and widespread demand for a responsible and reliable official source of producing them. This would put the bee squarely on the U. S. Bureau of Labor Statistics, which is the logical agency to undertake the job.

"You can see," said the able and earnest young woman to this correspondent, "we wouldn't want to be caught fast asleep with no program to offer."

Well, there are a lot of "ifs" in that layout and the program may never come forward, but there is one thing certain, the Bureau of Labor Statistics will not be caught fast asleep—not, at least, while Commissioner Lubin is at the helm and such foresighted associates are in there running the works.

It should not surprise many interested persons if the special telephone investigation hearings do not start until after the elections. That is not official, but the FCC is very busy with broadcasting matters right now and word goes up and down Pennsylvania Avenue at this writing that it will remain so engaged until all of us know the worst about *vox populi*.

The only other matter of major telephone importance over at the FCC was the division hearing on the Rochester (N. Y.) Telephone Corp. case which took place September 28. The company's attorney, T. Carl Nixon, argued against Chief Examiner Arnold's report that the "veto control" exercised by Bell share holdings under the company's charter is the type of "control" contemplated by Congress in Section 2 (b) (2) of the Communications Act.

Incidentally, Mr. Nixon followed, in more detail of course, the general line of reasoning outlined by your correspondent in TELEPHONY of September 5, 1936. A decision by the division should come along in about a month, but it is likely that this test case, so important to many Independents, will not be finally settled by the telephone division of the FCC, but by the Federal courts.

PLUGGING FOR NEW BUSINESS

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

"WHAT are you doing with that gun, Mose?" "Can't you see? I'se pluggin' fo' new business," said Mose, as he lifted his gun to his shoulder, carefully, accurately, and with self-assuredness, aimed at a spot in the sky, and brought down his game.

A good gamester knows that he can bring down his bird more times than not if he takes *care* in preparation, is accurate in his aim, and has moderate self-assurance, which makes for a steady arm. The result is he wastes very little ammunition.

Operators, how may we plug for new business while plugging calls? When we spot a prospect, should we try to plug it, or leave it for our company to discover and go after? How do we know new business is within our reach? By being alert and observant while we plug, plug, all day long.

"How can we be observant when we cannot see beyond the face of our switchboards?" asks an operator.

We don't actually have to *see* with our *eyes* to observe our customers' needs for additional equipment. We can *observe* with our *minds*. When a line is continually busy, it should indicate to us that there is an overflow of calls for that one outlet. So, let us *do* something about it, instead of saying: "Oh, I'm sorry, Mr. Adams. The line is busy again."

What should we do? Get that prospect *now! Your* ammunition may be more convincing, if used at once, than your company's will be later on. It is better to strike while the iron is hot.

Mose *knew how* to plug for new business; so must *you* before you can go prospecting.

A story is told by a famous pianist of an experience he had when a child of seven years, playing at a reception for some noted people. He said he thought he was getting through Beethoven's "Kreutzer Sonata" very well for a little boy. However, this sonata has several long, impressive rests, and during one of these rests an old lady close by leaned over and whispered to him, "Play us something you know, dear."

Lincoln Company Cuts Over Another Dial Exchange

The exchange of the Lincoln Telephone & Telegraph Co. at Murdock, Neb., is now completely automatic in operation, the cutover being made a real event in the history of the town. Mayor Miller cut the wire which transformed it from a manual to an automatic system and then put through the first call to General Commercial Superintendent H. F. McCulla at Lincoln.

Meeting Called of Louisiana Companies

Plans for organizing an Independent telephone association in Louisiana will be discussed at a meeting on Monday, October 26, to be held at Hotel Bentley in Alexandria, La., according to information from W. T. Henning, Cammeron Telephone Co., of Sulphur. All Independent telephone companies in Louisiana are urged to send representatives.

London's 100th Automatic Exchange in Service

Stepney Green was the 100th telephone exchange in the London area to be transferred to automatic operation, the ceremony taking place August 22. There are still about 150 manually-operated exchanges in the area, but more than 50 per cent of the subscribers' lines are connected to automatic exchanges.

Here and There in the Field

Bandit Caught 15 Minutes After Bank Holdup

A lone bandit recently robbed the Bank of Alpena, S. D., of $800 in cash and was captured within 15 minutes afterwards. During the robbery someone pressed the button that set off a continuous alarm in the local office of the Alpena Telephone Co. where Miss Madonna Gamble was on duty. She returned the signal on the bank telephone but received no answer. She immediately notified business places in town of the robbery and the bandit was shortly thereafter caught.

Miss Gamble, shown in an accompanying photograph, has been an operator for the Alpena company for six years and displayed quick perception of the situation, leading to the speedy capture of the robber.

MADONNA GAMBLE, Alpena, S. D., Telephone Operator for the Alpena Telephone Co., Aided in Capture of Robber Within 15 Minutes After Bank Holdup.

Humor Sells Telephone Directory Advertising

Humor is doing a first class job of selling the yellow pages for Southern California Telephone Co.—according to Frank Mussetter, advertising manager with offices in Los Angeles. The cartoon-strip idea was embodied by him in a series of small space inserts.

These accomplish a double purpose, Mr. Mussetter points out. First, they sell the public on the idea of utilizing the yellow pages. This indirectly increases traffic. Second, they sell advertisers in these pages by demonstrating the support which the company offers in calling public attention through these clever mediums to the ads of individual lines of businesses.

In effecting this double purpose, each cartoon-ad points out a listing that can be found in the directory. Doing this with humor, well illustrated, means that each listing will be thus called to the attention both of space users and their buying public, in a direct manner—and one that will be remembered as straight advertising copy would not be. Copy is then tied in with display at the telephone offices by using a cartoon window featuring the identical idea shown in the newspaper ad. This remains in place during the run of the newspaper ad.

The "Telephone Book" is featured in each ad by showing how various imaginary dilemmas might be solved by turning to the yellow pages. These situations cover a wide range of subjects. They are topically presented, thus giving them greater appeal.

For example, a June Bride ad is illustrated by a comedy drawing of bride, bridegroom, and minister at the altar, all looking bewildered because the ring has been lost. The "blurb" reads: "If you had your telephone book you could look under jewelry." A man shipwrecked on a desert isle ruminates: "If I had my telephone book here, I could locate a good restaurant."

In another a tramp is shown putting a patch on the trousers of a second tramp, with a blurb reading: "If we had the telephone book we could look under hemstitching." A springtime ad shows a comedy bird roosting on a dilapidated building, the caption below reading: "If he had his telephone book he could look under interior decorating."

Straight copy at the bottom of each cartoon then plugs for yellow pages. As shown in the accompanying illustrations, ads are tied into the series by running the words "Yellow Pages" in script across the bottom of each and by showing a small cut of a telephone book open at the yellow pages, over which is super-imposed a black-out with white lettering which reads: "Classified Telephone Directory."

Recent Prices in the Metal Markets

New York, N. Y., October 5: Copper—Quiet: electrolytic spot and future, 9.75c per lb.; export, 9.75@9.80c. Tin—Firmer; spot and nearby, 45.75@45.87½c per lb.; future, 45.37½@45.50c. Lead—Steady; spot New York, 4.60@4.65c per lb.; East St. Louis, 4.45c. Zinc—Dull; East St. Louis, spot and future, 4.85c per lb.

"IF YOU HAD YOUR TELEPHONE BOOK YOU COULD LOOK UNDER JEWELRY"
CLASSIFIED Telephone DIRECTORY
You'll find that the Yellow Pages of your Telephone Directory will serve as your "best man" on many and varied occasions. Just about everything you might need in annoying emergencies is listed among the 5,800 classifications
Yellow pages
SOUTHERN CALIFORNIA TELEPHONE COMPANY

"IF I HAD MY TELEPHONE BOOK HERE, I COULD LOCATE A GOOD RESTAURANT"
There's no excuse for you becoming stranded in trying to find where to buy what you want. The Yellow Pages of your Telephone Directory, with their 70,000 listings under 5,800 classifications, will direct you quickly and reliably
CLASSIFIED Telephone DIRECTORY
Yellow pages
SOUTHERN CALIFORNIA TELEPHONE COMPANY

"JOHN, WE'LL HAVE TO DO SOMETHING ABOUT THAT ROOF—LOOK IN THE TELEPHONE BOOK AND LOCATE THE NEAREST ROOFER"
CLASSIFIED Telephone DIRECTORY
If you want estimates on re-roofing, repairing, or repainting, just turn to the Yellow Pages of your Telephone Directory. They quickly direct you to nearby—and dependable—carpenters, painters, plumbers, plasterers, roofers. Look in the Yellow Pages first.
Yellow pages
SOUTHERN CALIFORNIA TELEPHONE COMPANY

Humorous Cartoons, Utilized by Southern California Telephone Co., Draw Subscribers' Attention to Value of Yellow Pages of Classified Telephone Directory.

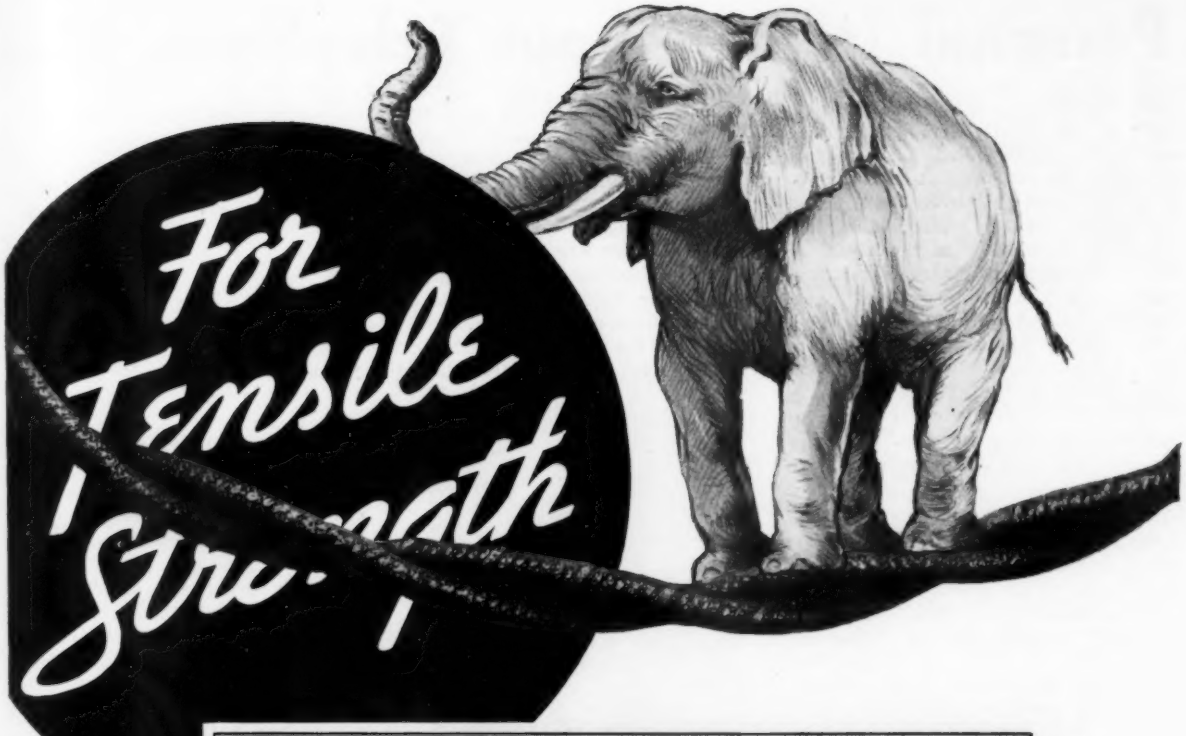
PAPER TELEPHONE CABLES

Modern design improvements and production methods join with the traditional reliability of Standard Underground manufacture to produce a product worthy of your every confidence. For construction details ask for Specification 3901.

"STANDARD UNDERGROUND" CABLES
GENERAL CABLE
GENERAL CABLE
GENERAL CABLE
FOR NEARLY 50 YEARS

MANUFACTURED BY
GENERAL CABLE CORPORATION

DISTRIBUTED BY
AMERICAN AUTOMATIC ELECTRIC SALES CO.
1033 W. Van Buren Street . . . Chicago, Illinois
WAREHOUSES IN KANSAS CITY, MO....RICHMOND, VA....AND SAN FRANCISCO, CAL.



Monotype Drop Wire
With the Copperweld Conductor

The reason you write HIGH TENSILE STRENGTH into your drop wire specifications is to cut down maintenance. And right there you put your finger on the fact that labor, not material, is the big item in service drop installations. For ultimate economy, therefore, you cannot afford anything less than the best in material.

MONOTYPE:—full .045 in. diameter No. 17 Copperweld conductor, over 200 lbs. **TENSILE STRENGTH**—General Cable quality rubber compound to over .109 in. diameter—General Cable close, tight braiding and **PITCH AND MICA** finish.

MANUFACTURED BY
GENERAL CABLE CORPORATION

DISTRIBUTED BY
AMERICAN AUTOMATIC ELECTRIC SALES CO.
1033 W. Van Buren Street . . . Chicago, Illinois
WAREHOUSES IN KANSAS CITY, MO....RICHMOND, VA....AND SAN FRANCISCO, CAL.

Personal Items About Telephone Men

J. H. DRILLING is now district manager of the Illinois Commercial Telephone Co. at Belvidere, Ill. He has charge of the exchanges at Capron, Garden Prairie and Belvidere. Mr. Drilling was manager of the exchange in Marion, Ill., previous to his promotion to Belvidere. He is assisted in his work by Ray Lang, who has been serving as manager in Belvidere since February, 1934. Mr. Drilling has been with the Illinois Commercial Telephone Co. since 1928. He was manager of the company's exchange at Paxton prior to going to Marion in a similar capacity.

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J. E. H. STEVENOT, Manila, president of the Philippine Long Distance Telephone Co., stopped in Chicago recently on his way to Washington, D. C. In addition to his activity in the telephone business, he is also trade commissioner at large for the Philippine government. One of the main purposes of his visit to America is to promote better trade relations between American manufacturers and Philippine consumers.

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HOWARD H. AGEE, son of J. H. Agee, vice-president and general manager of the Lincoln (Neb.) Telephone & Telegraph Co., was married September 26, to Miss Roma DeBrown, daughter of Mr. and Mrs. L. H. DeBrown of Lincoln. The wedding took place at the First Plymouth Congregational church, Lincoln, in the presence of a large number of friends, and was followed by a reception in the church parlors. Mr. Agee, the groom, is an executive of the Northwestern Bell Telephone Co.

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GEORGE E. BECKER, Pawnee City, Neb., president of the Pawnee Telephone Co. and for several years president of the Nebraska Telephone Association, has regained normal health after an illness of several months, part of which was spent in hospitals.

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LON J. JESTER, of Chicago, Ill., was elected vice-president and general manager of the newly-formed Mid-West States Telephone Co. at a meeting of the board of directors September 9. The Mid-West States Telephone Co. is the successor company to Mid-West States Utilities Co., which company has been operated since 1931 by Mr. Jester as receiver and trustee.

In addition to being vice-president of the Mid-West States Telephone Co., Mr. Jester is also president of the Mid-West States Telephone Co. of Wisconsin, the Mid-Continent Telephone Co. of Wisconsin, the Farmers New Era Telephone Co., Hebron, Ill., the Bristol (Wis.) Telephone Co., the Mid-Continent Telephone Co. of Illinois, the Winnebago County Telephone Co., Winnebago, Ill., the New Milford (Ill.) Telephone Co., the Iowa Union Telephone Co., the Minnesota Union Telephone Co., and the Mutual Telephone Co. of Rolfe, Iowa.

Mr. Jester has served in the telephone industry since 1911. He started his career with the old Central Union Telephone Co., serving in various capacities. He remained with the Bell organization until July, 1925, when he accepted a position as district manager with the Illinois Southern Telephone Co. In 1928 he resigned to become general manager of the Mid-West States Utilities Co.

LON J. JESTER, Vice-President and General Manager of the Newly-Formed Mid-West States Telephone Co., Successor of the Mid-West States Utilities Co., Which Mr. Jester Operated as Receiver and Trustee Since 1931.

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HARRY A. LIVERMORE, for nearly 15 years statistician of the Northwestern Bell Telephone Co., Omaha, Neb., has been transferred to New York City as executive assistant to T. G. Miller, vice-president of the American Telephone & Telegraph Co. in charge of long lines operation.

Mr. Livermore began his telephone career while a high school student at Fairmont, Minn., as telephone operator for the Fairmont (Minn.) Telephone Co. During his summer vacations of 1900 and 1901, he was a member of the company's construction crew, first as groundman and lineman. In 1903 he went with the Northwestern Bell in its equipment shop in Minneapolis. The following year he was made local manager of the New Richmond and Hudson, Wis., exchanges, with headquarters in the latter city. He continued in charge of these exchanges during the ensuing two years.

Leaving the telephone business for a brief period he returned, in 1909, as clerk to the district manager of the North Dakota Independent Telephone Co. at Hope, as previously mentioned.

From 1915 to 1920, he was secretary and auditor of the North Dakota Independent Telephone Co., with headquarters at Fargo, and was also secretary of the North Dakota Telephone Association. He is a graduate of the University of Minnesota.

During the six years prior to 1915 he served the North Dakota company in various capacities—as clerk to the district manager at Hope, N. D., as assistant district manager, as district commercial manager, and as district accountant at Fargo.

Mr. Livermore assumed his new position in New York on October 1.

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D. R. CULBERTSON, formerly manager for the Lincoln Telephone & Telegraph Co. at McCool, Neb., has been placed in charge of a division of the plant work for the York district.

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MISS MILDRED ADAMS, voice training instructor for the Lincoln (Neb.) Telephone & Telegraph Co., has recently been filling program engagements before business groups in the district. Recently, with three other members of her demonstration staff, she presented a program before the Rotary Club of Nebraska City, completely fascinating business men with the practicality of using the same principles in their own business contacts.

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J. HERON CROSMAN, JR., Philadelphia, Pa., secretary of the Bell Telephone Co. of Pennsylvania since 1924, resigned on September 24, effective on October 11, when he will retire on a pension after more than 42 years in the telephone industry. C. Lathrop Ritchie, treasurer, will succeed Mr. Crosman.

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CHARLES H. BAUER has been appointed district manager of the New England Telephone & Telegraph Co., at Bangor, Me., succeeding Byron M. Patten, who has been appointed training supervisor, metropolitan division, Boston, Mass.

★ ★ ★ ★ ★ CONVENTION EXTRA

AUTOMATIC ELECTRIC NEWS

Published Occasionally By
AUTOMATIC ELECTRIC COMPANY
1033 West Van Buren Street, Chicago

OCTOBER 10, 1936

Automatic's Exhibit Reflects Year's Progress

EXTRA!

Special Invitation to Convention Visitors

We take this opportunity to invite all telephone men to visit our factory and general offices at 1033 West Van Buren Street, where both production processes and finished products in endless variety await their inspection. Any representative of American Automatic Electric Sales Company will gladly make the necessary arrangements.

AUTOMATIC ELECTRIC COMPANY

Visitors Urged to Examine New Automatic Electric Creations

Telephone men attending the Independent Telephone Convention will find unusual variety and interest in the new developments in telephone apparatus which will be displayed this year. Such is the opinion voiced by R. W. Siemund, vice president of American Automatic Electric Sales Company, in a recent interview in which he outlined that company's plans for a convention exhibit.

"No one can accuse the telephone manufacturers of lagging behind in the matter of technical progress," said Mr. Siemund; "at least, not after looking over the products we are planning to put on display at our headquarters at the Stevens during convention week."

"What would you say is the most interesting development you are showing this year?" we asked Mr. Siemund.

"That's hard to answer," he replied. "Of course, all of these improved devices are interesting to the telephone man. But some of the least spectacular are of the greatest economic importance. Others are intensely interesting from a technical viewpoint, but are perhaps not quite so important commercially. In planning our exhibit we have tried to present a wide variety of both types of developments.

"Our newest development is shown in the unique exhibit of the new 'silent pawl' dial. We've retained the long-life Type 24 mechanism, but have entirely eliminated the 'click.' With this new dial, you can stand a few feet away from a person dialing a number, and I don't believe you'd even know he was making a call until he began to talk.

Amplifier Shows Improvement

"To show the remarkable improvement, we have had samples of the old and new dials fitted with an amplifier and loud speaker. No one should leave the convention without witnessing this demonstration and examining this remarkable dial."

Show Attractive Exhibit of New Art Shade Monophones

One of the first things at the convention which every telephone man will want to see, is the exhibit of new Automatic Electric Monophones, especially the two popular self-contained models — the Type 34A3 desk Monophone and the Type 35A5 wall-mounting Monophone.

To the telephone user, these Monophones have an unusual appeal, due to their distinctive modern styling which makes them a decorative asset in any room or office. He appreciates their new convenience of operation, which makes every telephone call a comfortable and pleasurable experience, rather than a bothersome duty.

The telephone man sees even more of advantage in the rugged, durable Monophone construction, in the high quality, standard-sized parts, and in the easy manual to automatic conversion feature. Visitors to the Convention are urged to see the complete Monophone line, including the colored models, presented in a choice of eight attractive art shades, with gold or chromium trim. The display is expected to be one of the most attractive at the convention.

"What are some of the other high spots of your exhibit," we inquired.

"Our display of automatic switching equipment naturally occupies the center of the stage," said Mr. Siemund. "This year we have gone to some pains to show—in as compact a space as possible—the various types of standard automatic switches which make up a complete automatic central office installation. Strowger Automatic equipment is so flexible in its mounting arrangement that to show a switchboard section as representing a 'standard' installation is somewhat misleading. The type and variety of mounting is determined by the local conditions—size of exchange, traffic, floor space, ceiling height, etc.—but the switches themselves are highly standardized products—and to illustrate their operation, we have set up individual switches in glass enclosed exhibit mountings where typical operations representing an exchange of any size can be conveniently observed.

"Our telephone display is always interesting, and particularly so this year because of the widespread success we have had with our two new Monophones, the Type 34A3 self-contained desk Monophone, and the Type 35A5 wall-mounting Monophone. We believe they're the most beautiful, most convenient telephones we've ever built—and judging from the sales figures for the last few months, there must be a lot of other people who hold the same view.

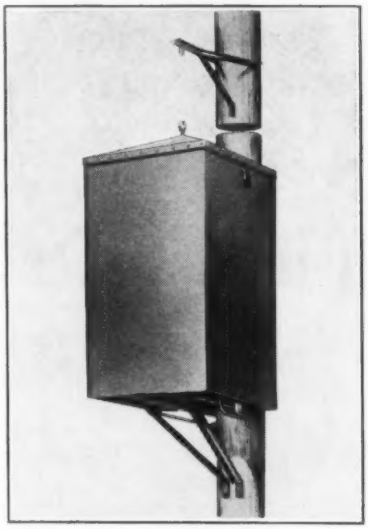
Nine-Line C-A-X

"In another room, we are going to set up a working model of one of our new pole-mounted automatic exchanges, in this case a Type 36A3 C-A-X. This is a completely unattended, full-automatic unit designed especially for outside mounting and has a capacity of nine lines."

"Isn't that rather small to be of practical use?" we asked.

"Frankly, that's what I thought when I first saw it," Mr. Siemund answered. "But one of the ideas behind it is that it will serve as a growth stimulant in backward areas, and that is exactly how it has worked out. Being compact and easily installed, it can quickly be replaced with a larger board, and moved elsewhere to achieve a similar result.

Pole-Mounted C-A-X



This drawing shows how the Type 36A3 C-A-X looks when installed on a pole. The cover is raised by means of a rope and pulley whenever there is occasion to inspect the equipment.

"Another recent development of great importance is the Automatic Electric Remote Control Toll Board. We are showing two positions of this cordless, automatic type switchboard, taken from a four position board which has been sold to the Delta Telephone and Telegraph Company for installation at Courtland, California. Every telephone man will want to see this new type toll board and learn about its time-conserving, labor-saving features.

Other Exhibits

"I won't try to describe our whole exhibit to you, but will just briefly mention that we have one display devoted to new items for the construction man, another given over to the latest developments in Automatic-Sands protection equipment, a specially designed loading coil demonstration set and a working exhibit of the Automatic Electric multiple pen recorder. These represent only the high spots, but you can tell all the telephone operating men for me that it will pay them to come and 'see the works' for themselves."

HERE'S CHANCE TO "SEE" OWN VOICE

Have you ever seen your own voice face to face? If not, you will have a splendid opportunity to do so at Automatic Electric Company's loading coil exhibit. Here a specially-designed cathode ray oscillograph has been set up, so that by talking into a microphone the electrical impulses which your voice sends along the telephone wires are broken up into their component waves and flashed on a ground glass screen. You'll be surprised to see how complex a wave form is set up by a simple sound, such as "a" or "ah"—and when you start to form whole words and sentences, the effect is somewhat like the jagged display of multiple lightning seen during a summer thundershower.

Amplifying Voice Waves

All of this is merely to demonstrate graphically what Automatic Electric loading coils do to a long telephone circuit. You can see how your voice waves traverse such a circuit, unequipped with any loading devices. Then Automatic Electric loading coils, properly spaced and balanced, are suddenly switched into the same circuit. The voice curves are immediately magnified many times, the sharpness and intensity of the "peaks" and "valleys" of the resulting curves also indicating true voice transmission with no distortion.

Uses New Alloy

By means of this interesting demonstration, the visitor can see the advantage of proper loading of telephone circuits to avoid excessive losses and voice distortion. Automatic Electric loading coils not only provide the highest type of performance, but due to the development of new magnetic alloys, are considerably smaller in size than previous loading coils of corresponding capacity. The exhibit is in charge of C. J. Larsen, one of Automatic Electric's transmission engineers.

Mr. Siemund said that American Automatic representation at the Convention would include some twenty sales representatives from out of town.

"Remote Control" Toll Board Betters Speed and Accuracy

Developed by Automatic Electric engineers to bring the same tremendous improvement in speed, accuracy and operating economy to toll switching that automatic switching equipment brings to local operation, the "Remote Control" Toll Board is attracting the attention of telephone engineers throughout the world.

Two positions of this cordless, automatic type switchboard are being shown at the convention—part of a four position board which is to be shipped to the Delta Telephone and Telegraph Company for installation at Courtland, California. Several installations of this new type toll board are in active daily service effecting appreciable operating economies. One of the largest orders yet received for this board consists of forty positions, recently shipped to Sao Paulo, Brazil, for the Brazilian Telephone Company.

No Cords, Plugs or Jacks

The Automatic Electric Remote Control Toll Board eliminates entirely all plugs, cords and jacks—the setting up of all connections being performed instantly and accurately by the same standard automatic switches that have been so satisfactorily used in local switching. The operator is concerned only with the operation of a few simple keys, and because of the increased concentration and lessened physical exertion, can handle more calls with greater accuracy and less fatigue than with the conventional type of board.

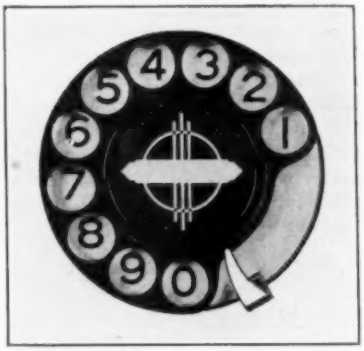
Modernizes Service

The Remote Control Toll Board is not just an alternate means of rendering toll service—it marks a definite forward step in the art of toll switching — so much so that even the latest types of cord boards must be regarded as out of date by comparison. Its use does not sacrifice or modify any of the present highly specialized toll switching practices. On the contrary, the introduction of automatic switches has permitted many improvements in service, faster, more accurate response, better connections. Former subscribers' complaints due to noisy cords, false disconnects caused by worn sleeves, and operator interference when reaching for jacks in adjacent positions, have been eliminated entirely whenever this board has been installed.

New "Remote Control" Toll Board

This installation at Monroe, New York, is one of several Strowger Remote Control Toll Boards installed by Automatic Electric Company. The actual connections are set up by switches instead of by cords, plugs and jacks.

"Cutaway" Finger Plate



Automatic Electric Company's new Type 24A36 Dial will be supplied if desired with cutaway finger plate as shown in the above illustration. This arrangement facilitates cleaning of the number plate.

It can be used with equal success either in conjunction with manual or with automatic central offices. Automatic Electric engineers urge that, whenever new toll switchboards or additions to existing switchboards are contemplated, telephone operating men give serious consideration to the adoption of this modern improved board. The two position exhibit at the convention offers an excellent opportunity for the study of its many definite advantages.

Two Wisconsin Towns to Convert to Automatic

The Urban Telephone Company, Clintonville, Wisc., has just placed an order for its fifth automatic switchboard—a thirty line Community Automatic Exchange for installation at Leopolis, Wisc. This company's use of automatic equipment dates from 1929, when its Clintonville exchange was converted. Three others followed in quick succession—Bowler, with 50 lines; Tigerton, with 100 lines, and Bear Creek, with 120 lines.

Belgium, Wisconsin, is also scheduled to have automatic service at an early date. The Belgium switchboard will be a thirty line C-A-X. The exchange is operated by the Mid-West States Telephone Company of Wisconsin, whose head office is at Fond du Lac.

Manual Switchboard Division Operates at Peak Capacity

Automatic Electric production officials report unusual activity in the manual switchboard department this year. While the forty-position toll board recently shipped to Brazil has accounted for much of that activity, orders for manual central office switchboards from the domestic field have also been plentiful.

Recent orders include a four-position Monotype central battery switchboard for the Hamilton, Texas, exchange of the Gulf States Telephone Company, a similar four-position switchboard for the Council Grove Mutual Telephone Company, Council Grove, Kas., a four-position remote control toll board for Courtland, Cal., a single position series lamp signal switchboard for the Sligo, Pa., exchange of the Leatherwood Telephone Company, and several miscellaneous manual switchboards for various Government departments.

Traffic Study Easy with This Machine

How long is it since you have made a complete, scientific study of your traffic conditions? Every telephone exchange should be subjected to such an analysis occasionally, to improve general efficiency and to properly forecast and plan additions of switching equipment to cope with changing and increasing traffic demands.

The Automatic Electric Multiple Pen Recorder is the ideal investigator to put on such a job. It consists of twelve electro-magnetically operated pens which record, simultaneously, twelve separate curves on the same moving paper chart. Rate of movement of the paper chart can be regulated and suitable time intervals indicated thereon, depending upon the operations to be recorded.

Thus a permanent and absolutely accurate record can be made of traffic and overflow conditions, an analysis of which will provide invaluable data for proper traffic planning and efficient allocation of switching units in exchanges, both small and large.

The Automatic Electric exhibit rooms at the Stevens contain a working display of the Multiple Pen Recorder, and is well worth a visit from every telephone man. Arrangements can be made, under certain conditions, to rent one of these recorders where it is needed for only a short time. Visitors can secure full information concerning the rental plan from any representative of American Automatic Electric Sales Company. The machine itself is a compact, portable unit, and is exceedingly flexible in its application to any type of telephone switchboard or trunk network.

Pennsylvania Company Adds to Automatic

With the recent installation of automatic equipment at its Emporium exchange, the Home Telephone Company of Ridgway, Pa., now has four of its seven exchanges operating on an automatic basis. The other three — Ridgway, Johnsonburg and St. Marys—were made automatic in 1929.

The installation at Emporium consists of 350 lines of Automatic Electric line finder equipment, which provides automatic service to individual, P. B. X. and multi-party lines.

Magnetic Telephone

This is one of the many practical adaptations of the Automatic Electric Magnetic Monophone—a telephone which operates over long distances without battery supply. See it in operation at the Convention.

Monotype Switchboards for Texas Company

This four-position Monotype steel-frame switchboard was recently installed for the Gulf States Telephone Company at its Commerce, Texas, Exchange. The company has recently ordered a similar switchboard for its Hamilton exchange.

New Dial Is Set To Better All Records

Newly Perfected "Silent" Dial Retains Basic "1000-Year" Mechanism, But Eliminates "Click" of Ratchet

Not content with having produced the quietest telephone dial so far placed on the market, Automatic Electric engineers have recently perfected a new dial incorporating the further improvement of an absolutely noiseless pawl. This new dial, known as Type 24A36, incorporates the same basic mechanism as that of the Type 24 Dial, which, when subjected to laboratory life tests, endured the equivalent of over one thousand years average daily service without failure of any kind. This record has never been approached by any other commercial dial.

The new Type 24A36 Dial, just perfected, uses the same basic, long-wearing Type 24 mechanism, with the addition of the "silent pawl" feature. The usual "click" of the dial ratchet has, for all practical purposes, been eliminated. All that can be heard is a quiet, subdued "whir-r-r-" as the dial returns to its normal position.

To demonstrate the quietness of operation of the new dial, Automatic Electric engineers have arranged a display with the old and new dials mounted side by side for convenient operation by any visitor. A microphone has been placed close to each dial, and wires from these lead to an amplifier and loudspeaker unit, so that all noises emanating from each dial are clearly audible.

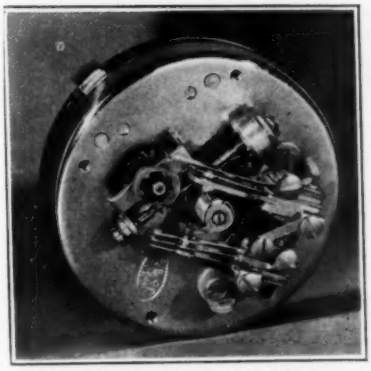
The operation of the old type of dial with the subdued ratchet click, sounds through the loudspeaker as a succession of sharp knocks. But with the new Type 24A36 dial, the ratchet sound, even over the loudspeaker, is scarcely audible.

In this exhibit, too, is shown the new "cutaway" finger plate, which is optional equipment on all orders for the new Type 24A36 dial. This plate has a section cut away between the "1" hole and the "0" hole, which permits easy cleaning of the number plate by merely inserting a cloth in the opening and rotating the finger plate a few times.

SPECIAL NOTICE!

For conveniently locating anyone who may be visiting the American Automatic exhibit rooms, the attendant in Room 2506 will be provided with a microphone. Connected to this will be several loud-speaker units placed strategically throughout the entire exhibit, permitting any desired person to be paged and summoned without delay. The loudspeakers will consist of a standard Magnetic Monophone unit coupled to a horn, providing a useful demonstration of loud-speaker operation without amplifiers.

New Dial



To make the Type 24 Dial even quieter than it has been seems almost like "gilding the lily." Yet that is just what Automatic Electric engineers have done. They have eliminated the ratchet clicks in the forward movement.

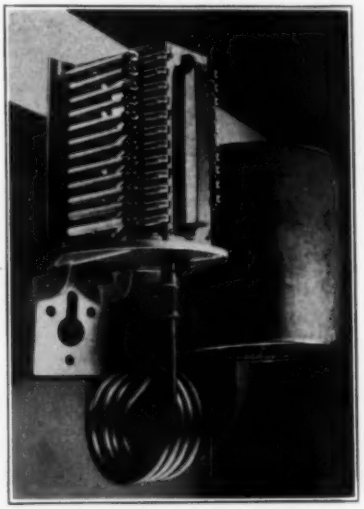
Lincoln Orders New Automatic Exchange

The Lincoln (Nebr.) Telephone and Telegraph Company, users of Strowger Automatic Equipment since 1904, has ordered a 1400 line automatic switchboard, for installation in a new exchange building now under construction. The area to be served by the new exchange will include the southeastern section of Lincoln and the suburbs of College View and Normal. The latter are now served by manual equipment. When this installation is completed, the entire city of Lincoln will have automatic service.

Show Complete Range of Protection Apparatus

Since Automatic Electric Company extended its manufacturing activities to include a comprehensive line of telephone protective equipment, the business of that department has shown continuous and increasing activity. Because of the high interest which telephone companies are showing in those products, the company will display a comprehensive selection of such apparatus at the convention.

Improved Terminal



This device—round type protected cable terminal—is one of the most popular items in the Automatic-Sands line. It has a capacity of 11 to 26 pairs and comes regularly equipped with Type 2105 Discharge Blocks.

While all of the products in the Automatic-Sands line represent considerable technical advance over previous protective equipment, with respect to improved mechanical construction and increased durability, interest is centered largely in the Type 2105 discharge block, which is standard equipment on all substation protectors and protected cable terminals. The discharge block is the key to effective protection against lightning and power currents. The Type 2105 block is an air gap type, self-cleaning and self-restoring. Having carbon to carbon discharge surfaces, there is no metal to burn away and render the block unsafe or inoperative. Its

(Turn to Page 6, Col. 3)

Graphs Show Performance of New Transmitter

Scientific tests conducted by Automatic Electric engineers have demonstrated conclusively that the use of ring-shaped electrodes and spherical insulated carbon chamber result in greater volume and higher fidelity throughout the "all-positions" cycle. Automatic Electric engineers have released a series of curves illustrating graphically the results of these tests.

A careful examination of the graphs will show the principal advantages of Type 35A7 design and construction, as revealed and verified by the most scientifically accurate tests that laboratory experts have been able to devise. Briefly summarized, they embrace the following points: 1. Uniform response regardless of position held. 2. High fidelity with no sacrifice of volume. 3. Unaffected by humidity, temperature or pressure. 4. Longer service life without deterioration. 5. Sensitivity does not change either gradually or periodically.

This performance summary indicates true "all-positions" performance, where regardless of position in which the handset is held, the transmitter delivers uniformly high results, unaffected by humidity, temperature or pressure. To the purchaser of handset telephones, this represents an important advance in transmission characteristics.

In compiling the necessary data, the transmission engineers utilized the most up-to-date laboratory equipment known to acoustic science to supplement the usual "talk and listen" tests. In this way, they were able to measure transmitter response with scientific accuracy and to plot curves showing the various characteristics of the transmitter's performance.

These curves have been enlarged and mounted on transparent glass slides, which form part of the interesting transmitter display at the convention exhibit of Automatic Electric Company.

New Transmitter Permits Talking in Comfort

When you use the Monophone hand unit, it doesn't matter what way you hold it. Just assume the most comfortable position. The new Monophone transmitter will "talk up" perfectly.

"Monotype" Jumper Wire Years Ahead, Tests Show

The new "Monotype" Jumper Wire recently placed on the market by Automatic Electric Company is years ahead in its method of construction and high insulation resistance, according to technicians who have subjected it to exhaustive tests.

The secret of this jumper wire's superior quality lies not only in an improved type of insulating material but also in the perfection of an exclusive and patented process of applying it. Automatic Electric Company's research engineers arranged a series of tests by means of which the insulation resistance of this wire could be ascertained under any and all conditions to which it might be subjected.

Under conditions of excessive humidity, as well as under normal conditions, it was found to have a much higher insulation resistance than wires of other makes using a similar material for insulation. Its insulation resistance after being immersed in water, then dried out (generally referred to as "insulation recovery") was found to be practically 100 per cent.

This wire has an unusually small overall diameter, holds the true color of its insulation over a long period of time and its construction gives complete and thorough protection from corrosion. It is available in single conductor, twisted pair and triplex No. 22 gauge, with either tinned or tinned-enameled copper conductors.

Protection Apparatus . . . .

(Continued from Page 5)

principal features are its ability to maintain a safe air gap for a much longer life, and its capacity to automatically ground the line under severe conditions, and to remove the ground when those conditions have passed.

Other pieces of Automatic-Sands protective equipment bear the same stamp of ingenious design and painstaking manufacture. For adequate protection "all along the line" there is no better name than Automatic-Sands.

Activities of Commissions and Courts

Arkansas Company Not Making Unreasonable Profit

The Arkansas Department of Public Utilities on September 19 in a two-to-one decision held that the Boone County Telephone Co. is not making an unreasonable return on its investment in its Harrison exchange system. It ordered both the company and the municipal authorities to show cause not later than October 5 why a sliding schedule of rates should not be placed in effect to divide earnings in excess of 6 per cent on an investment of $65,000, between the company and the patrons.

The majority opinion was issued by Commissioners Joe Bond and T. G. Seal. In a dissenting opinion P. A. Lasley, commission chairman, objected to the inclusion of two items of $990 a year in the list of operating expenses.

One of the items represented an increase of $420 a year in the salary paid to the president and general manager of the company, who is the majority stockholder. The other item of $570 a year represents one-fifth of the expense of a previous rate investigation, which had been prorated over a five-year period.

The commission found that the value of the telephone system for rate-making purposes was $65,000, and that a return of 6 per cent per year on the investment would be reasonable. The company's gross income last year was $20,566.23, and for five months this year, $9,167.67, an increase of more than 9 per cent over the same period in 1935. The company had 814 telephones in service on June 1.

Operating expenses of $17,334.41 were shown for 1935 with a depreciation charge of $1,716 included in the figure. Estimates for 1936 indicate that the company will earn less than 6 per cent on its investment.

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A. T. & T. Co. Files New Radio Broadcasting Rates

On September 22 the Telephone Division of the Federal Communications Commission announced the receipt by the commission of a new schedule of the American Telephone & Telegraph Co., Long Lines Department, effective November 1, governing the furnishing of program transmission channels used in connection with radio broadcasting. The new schedule is claimed by the company to contain revisions and adjustments that will save radio broadcast channel service customers about $250,000 a year.

The principal changes proposed to be made in rates and rate practices are: (1) Computation of interexchange channel charges will be on the basis of airline instead of the present circuit or route distances. (2) The connection charge for receiving programs at stations connected to Schedule A channels will be reduced from $4,000 per year to $175 per month.

(3) The highest grade continuous service may be contracted for on a monthly instead of an annual basis. (4) Amplifying equipment provided by the customer at his studio may be used to interconnect channels. (5) All classes of channel facilities furnished by the company may be interconnected. Previously, music programs could not be fed from an inferior to a high grade channel. (6) Charges for reversal in direction of channels will be slightly increased.

In addition to the foregoing, a number of other adjustments in rates and practices of advantage to the customer have been included in the new schedule.

The Telephone Division's announcement stated that "The adjustments, although voluntarily filed by the telephone company, follow closely, and in a large measure remedy the complaints concerning rate practices voiced by radio broadcast station licensees in their responses to a questionnaire recently circulated among them by the commission in connection with its special investigation and study of the American Telephone & Telegraph Co. It should be understood, however, that the new schedule does not purport to effect a general reduction in rates."

Answers to Traffic Questions on Page 22

1. No, extension DA is not a chargeable report.
2. No.
3. Yes.
4. The report is passed and then the amount of the report charge is requested.
5. Ordinarily you would say, for example: "This is the Springfield operator. Mr. Hill in Springfield is trying to reach Mr. Weber at 239 Maple Street and asks whether it would be possible for you to send for him." The wording of this phrase may be varied in cases where it seems to be appropriate to do so.

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Southwestern Associated to Purchase Properties

The Southwestern Associated Telephone Co. was granted authority on September 23 by the Federal Communications Commission to purchase certain properties from the Western Telephone Corp. of Texas, the Western Telephone Corp. of Oklahoma, The Western Telephone Corp. of Kansas and the Western Light & Telephone Co.

The application was filed by the Southwestern Associated company with the FCC on June 18 (TELEPHONY of July 4, page 33).

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Lower Bell Rates in Kentucky, November 1

Reduced rates will go into effect in Louisville, Ky., and in other Kentucky exchanges of the Southern Bell Telephone & Telegraph Co. on November 1, according to a rate schedule approved by the Kentucky Public Service Commission on October 1. The Louisville reduction amounts to approximately $353,722 or 12.75 per cent, while the saving to subscribers out in the state will be about $162,629. All of the company's 138 exchanges in Kentucky are affected with the exception of Princeton, Danville and Mt. Sterling.

Mayor Miller, of Louisville, stated that the reduction falls short of "what we eventually expect to secure," claiming the reduction should have amounted to about $425,000 for Louisville. He explained that since the commission did not hold a hearing in setting the rates, the way is not closed for the city to ask, on its own volition, for a new city rate hearing. That can be done any time after the rates become effective, he stated.

A comparison of the new and old monthly rates in Louisville follows:

	NEW	OLD
Residence (one-party)	$3.75	$ 4.25
Residence (two-party)	3.00	3.75
Residence (four-party)	2.50	2.75
Business (one-party)	8.50	10.00
Business (four-party)	6.00	7.00

The business message base rate was cut from $5.50 to $5 with all calls in excess of 85 monthly costing three instead of four cents each, as at present. Reduction of the handset charge from

WINTER CRUISE

Hawaii

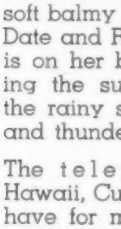
Cuba

WEST INDIES

"WHERE SUMMER SPENDS THE WINTER"

Amid brilliant sunshine, a profusion of riotous colored flowers, soft balmy trade winds rustling the Date and Royal Palm trees, nature is on her best behavior. But during the summer months, through the rainy season, terrific lightning and thunder storms occur.

The telephone companies in Hawaii, Cuba and the West Indies, have for many, many years, protected their plants with Cook Protected Pole Cable Terminals and Cook Central Office Protection. There are more than 2,000 Cook Protected Terminals installed throughout the islands of the Hawaiian group.



For a real severe job, experience has proven you can rely upon Cook Protective Equipment.

Insist on Cook.

COOK

Electric Company

Chicago

2½ to 15 cents monthly for three years, charges for existing service connection in Louisville modified to a maximum of $3.50 and minimum of $1.25, and lowering of the extension station rate from $1.25 to $1 were provided in the new schedule.

Suspension, effective November 1, of "free inter-exchange service" was authat in the future Louisville users will have to pay a call charge for telephoning such points as Harrods Creek, Anchorage, Jeffersontown, etc., cost of which is now included in the standard monthly rate. No toll charge was fixed by the commission, but Mayor Miller said he understood the company would inaugurate a ten-cent charge for each call.

The commission's order said that rates are higher in those exchanges where there is free service and cited Anchorage, where to obtain free exchange service with Louisville a subscriber pays the regular Louisville rate of $4.25 plus $1.

Chairman J. C. W. Beckham and Commissioner T. B. McGregor voted to accept the company's offer, while Commissioner James W. Cammack, Jr., filed a dissenting opinion. Mr. Cammack objected to elimination of free interexchange service and acceptance of the new schedule without giving the city of Louisville an opportunity to present its separate study and findings.

The commission's majority opinion said: "We find from an analysis of the company's exchange statistics for 1935 that out of its 138 exchanges, 50 are classified as profitable and 88 are unprofitable. The 50 profitable exchanges, including Louisville, had 88,503 telephones in average operation during 1935, the average investment, exchange and toll for these profitable exchanges being $23,412,488, with the net earnings, exchange and toll, $1,301,635 and the per cent of return for that year being 5.56. Of course the largest exchange in this group is Louisville, with 53,453 average stations. The per cent of return upon the Louisville exchange . . . was 6.48.

"Among the other profitable exchanges analyzed were Paducah, Owensboro, Bowling Green, Frankfort, Danville, Winchester, Henderson, Maysville, Richmond, Mt. Sterling, Cynthiana, Madisonville, Murray and Benton.

"In the 88 unprofitable exchanges for that year there were 13,665 average stations with an average investment, exchange and toll, of $3,712,356, upon which there was a loss instead of earning for the company.

"Thus it is apparent from the record that the subscribers in these 133 exchanges numbering more than 10,000 would receive a rather substantial reduction in the payment of telephone rates without the cost incident to litigation that would be necessary in building up a record required to support a larger reduction.

"From a consideration of all the facts in this record it appears that the amount of reduction offered is at least a larger percentage of the total reduction which might mean the same at the end of long and costly litigation."

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Commission Rulings and Schedule of Hearings

Federal Communications Commission Washington, D. C.

September 22: Telephone Division announced receipt by the commission of a new schedule of the American Telephone & Telegraph Co., Long Lines Department, governing the furnishing of program transmission channels used in connection with radio broadcasting, effective November 1.

September 23: Telephone Division decided that the Wabash Telephone Co., of Bloomington, Ill., should be classified as a connecting carrier and, as such, is subject to the provisions of sections 201-205 of the Communications Act of 1934.

September 28: Oral arguments before Telephone Division on examiner's report No. 111-9 to determine whether the Rochester Telephone Corp., of Rochester, N. Y., comes under the jurisdiction of the commission.

September 30: Telephone Division granted applications of the Lorain County Radio Corp., of Lorain, Ohio, for radio station licenses, third class public service on the following ships: A. T. Kinney, Robert S. Hallack, Robert L. Ineland, Henry G. Dalton and the Wm. G. Mather.

September 30: Telephone Division granted application of the New York Telephone Co., of New York City, for a third class public station license on the ship, Lidiv.

September 30: Telephone Division granted American Telephone & Telegraph Co. authority to supplement existing facilities between Danville and Corbin and Pineville and Harlan, Ky., pursuant to Section 214 (a) of the Communications Act of 1934.

Arkansas Department of Public Utilities

September 19: Decision rendered in rate investigation of the Harrison exchange of the Boone County Telephone Co. Majority opinion held that company is not making an unreasonable return on its investment and that a return of 6 per cent would be reasonable. Estimates for 1936 indicate less than a 6 per cent return. Chairman P. A. Lasley in his dissenting opinion objected to the inclusion of two items totaling $990 a year in the list of operating expenses.

Illinois Commerce Commission

October 8: Hearing in Springfield on citation of the commission on its own motion against the Assumption Mutual Telephone Co. to show cause for the discontinuance of telephone communication facilities between Assumption and Westervelt.

Kentucky Public Service Commission

October 1: Order issued approving rate reductions of the Southern Bell Telephone & Telegraph Co. amounting

to approximately $353,722 or 12.75 per cent in Louisville and about $162,629 in other exchanges in the state. The additional handset charge was reduced from 25 to 15 cents per month for three years, in addition to changes in other rates and charges. The three exchanges at Princeton, Danville and Mt. Sterling were unaffected by the order.

Missouri Public Service Commission

October 2: Application approved of the Machens-West Alton Telephone Co. for authority to sell and the Southwestern Bell Telephone Co. to buy all of the physical assets of the former.

October 2: Application approved of the Grover Telephone Co. for authority to sell and Southwestern Bell Telephone Co. to buy all the property and physical assets of the Grover company.

October 2: Application approved of the Chesterfield Telephone Co. for authority to sell and the Southwestern Bell Telephone Co. to buy all of the property and physical assets of the Chesterfield company.

Nebraska State Railway Commission

October 19: Hearing in the matter of the application of Clarence T. Fleener, administrator, for authority to sell the Coleridge Telephone Co. to Louis Doelz.

October 19: Hearing in the matter of the application of the Western Telephone Corp. for authority to sell exchanges at Lynch and Verdel to Ed. Ferguson.

New York Public Service Commission

October 7: Hearing at Canandaigua before Chief Engineer W. E. Hinman on complaint of 25 or more telephone subscribers against the Seneca-Gorham Telephone Corp. as to adequacy and reasonableness of its service.

Ohio Public Utilities Commission

September 28: Alleging that within the period of January 1, 1932-July 31, 1936, inclusively, it had expended from its treasury for the provision of net additions not heretofore capitalized, the sum of $256,947.46, none of which was obtained by the issue of capital securities, the Mansfield Telephone Co. petitioned the commission for authority to reimburse its treasury for such expenditures by issuing and selling at a declared value of $18.36 per share, 13,900 shares (additional) of its no par common stock.

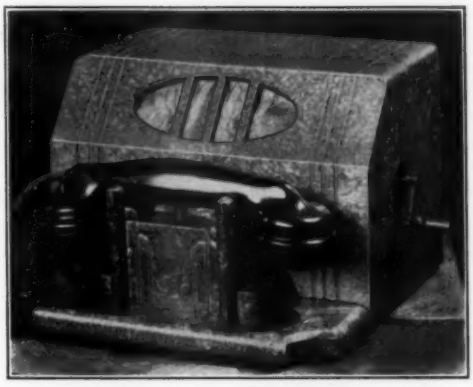
September 29: Authority to abandon its exchange at Porterville, in Perry county, sought in application filed with the commission by the Tridelphia-Sayre Telephone Co. The company stated in its application that at one time it served many of the miners employed in the coal mines at San Toy, all of whom have discontinued the service and that it now has only 56 subscribers who are charged a monthly rate of 50 cents each.

It was also set forth by the company that the commission some time ago had granted it authority to increase its rates and charges, but the company has not exercised this authority, as all but six of its present subscribers have indicated their intention to discontinue the service if rates were increased.

Oklahoma Corporation Commission

October 2: Hearing in the Barnsdall telephone rate case. An agreement has been filed between Barnsdall and the Oklahoma Telephone Co. Rates ordered by the commission on May 26 will remain effective until the agreement is acted upon.

Play Fair With Your Magneto Subscribers



Give Them the New TABLEPHONE

Common battery subscribers have been demanding — and getting — new types of handset telephones that have beauty appeal as well as fine transmission qualities.

But until the Tablephone arrived, nothing had been done for the magneto subscriber. Now Suttle offers you this remarkably beautiful instrument at a price that you can't object to.

Surely your first-class magneto subscribers that pay you top rates are deserving of this fine modern style telephone. Already many hundreds of them are in service and the patrons are "tickled to death" about it.

Every one of you telephone men are thinking right now of some subscriber who would like this telephone.

Are you playing fair with that loyal subscriber by not giving him or her a Tablephone?

The transmission qualities of the Tablephone are of the highest for a magneto instrument. The handset is the latest improved Leich product, offering clear reproduction without distortion.

The Tablephone is offered in six colors of a beautiful crystalline finish—Maroon, Green, Sea Blue, Brown, Gun Metal Blue, and Black. Color chart sent on request.

It is mounted on rubber cushions so it can be set on finest polished furniture without danger of scratching finish.

See it at the National Convention at Chicago

Order Them Out of Suttle Salesman Catalog

SUTTLE EQUIPMENT CO.

LAWRENCEVILLE, ILLINOIS

Make our Exhibit your Headquarters during the Convention . . .

ROOM 2562 STEVENS HOTEL

LOOMIS TELEPHONE ADVERTISING CO.
DIRECTORY ADVERTISING

A SALES ORGANIZATION EXCLUSIVELY

Telephone Bldg., Kansas City, Mo.
Citizens Trust Bldg., Ft. Wayne, Ind.

UNDERWRITERS
AND
DISTRIBUTORS
OF
INDEPENDENT TELEPHONE
COMPANY SECURITIES

Inquiries Invited

TELEPHONE
SECURITIES CORPORATION
120 So. La Salle St.
CHICAGO, ILL.
Telephone: Franklin 0181

The Manufacturers' Department

New Holtzer-Cabot Magneto Ringing Set

The Holtzer-Cabot Electric Co., of Boston, Mass., has issued a bulletin (No. 1310-00) describing its new magneto ringing set, known as the type "MG-125". Utilizing "Alnico," a new powerful magnetic material, the Holtzer-Cabot company claims to have produced a magneto motor generator which, for simplicity and ability to run long periods without attention, is unsurpassed.

The new generator consists of a two-bearing frame with stationary windings for both motor and generator. The machine is provided with wool-packed oil return bearings. Under the base of the set is mounted a capacitor of special design, which dispenses with the use of slip rings and brushes to bring the motor up to speed, the bulletin states. Motor and generator terminals are mounted on insulating blocks in recesses cast in the base, which are used as junction boxes with facilities for direct conduit connection.

The motor rotor, of the simple squirrel cage type, and the generator rotor, which is of solid Alnico casting, are both mounted on a single shaft. The generated voltage of the MG-125 ringing set has a small 350-cycle component to give audible ringing, the company claims. This can be reduced to any desired value by connecting a small condenser across the generator terminals.

▼ ▼

Ingenious Distributing Frame in Service 30 Years

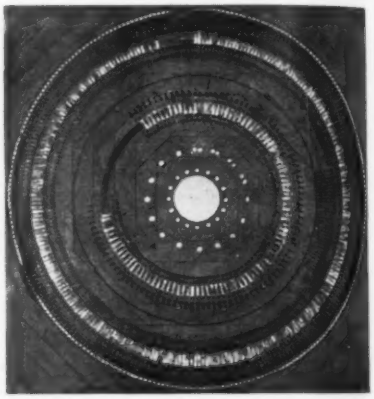
No, that is not a roulette wheel, which is pictured in the illustration on this page. It is a main distributing frame—built in 1900 by Dan Pelt at State Center, Iowa, where it was in constant service until March of 1930.

The base is of maple flooring, 3/8ths of an inch thick, built out from the center on a pine base to prevent warping. The layout was all done by hand; each of the hundreds of screw holes and the jumper wire holes were drilled by hand. Mica fuses and carbon lightning arresters provided the protection.

The unique part of the frame was the method of distribution. One wire of the outside pair and one wire from the switchboard cable were grounded right on the frame. Cross connecting was done from the fuse on the outside circle through the base to the back of the frame and then through the large hole in the center to the front connection on the inside circle.

Since both ends of the jumper wires terminated on a circle, jumper wires never had to be cut or changed; all jumper wires were exactly the same length.

This very interesting antique can be seen in the exhibit room of the Cook Electric Co. at the Stevens Hotel, Chicago, during the national convention of the United States Independent Telephone Association next week.



Home-Made Main Distributing Frame Which Was in Service from 1900 to 1930 at State Center, Iowa.

▼ ▼

Stromberg-Carlson Contracts for Three Switchboards

The Stromberg-Carlson Telephone Mfg. Co., Rochester, N. Y., has signed contracts for three complete central office installations, it has just been announced by sales officials of the company.

The Carey Electric Telephone Co. of Carey, Ohio, will install a Stromberg-Carlson three-position switchboard with universal type cord circuits. The board will be equipped for 380 local central energy lines, 20 rural and ten toll. Complete central office equipment, including terminal boards, power supply units, etc., are covered by this contract.

The Southwestern Associated Telephone Co. of Lubbock, Texas, will install new complete central office equipment in Shattuck, Okla., equipment and installation to be by Stromberg-Carlson. The switchboard will be a two-position one with universal cord cir-

cuits; 240 local, 16 rural and eight toll lines.

For Churchville, N. Y., the Rochester Telephone Corp., has contracted for new complete central office equipment. The switchboard, in this installation, will be a three-position Stromberg-Carlson board equipped with universal cord circuits and having 260 local lines and 20 toll lines.

▼ ▼

Field Representative of Copperweld Company

The Copperweld Steel Co., Glassport, Pa., announces the appointment of Leo N. Blago as field representative in its southeastern district, with headquarters in the Hurt Building, Atlanta, Ga.

Mr. Blago, a graduate electrical engineer, has spent the greater part of his time in recent years in the South. He is well acquainted with operating problems and conditions in the territory where he will represent the Copperweld company.

▼ ▼

New Catalog Issued on Runzel Cords

The Runzel Cord & Wire Co., of Chicago, has issued a new catalog on Runzel cords "for every make of telephone and switchboard." It contains some 24 pages of descriptions, illustrations, chart numbers and prices on Runzel telephone and switchboard cords. "There's a Runzel cord for every purpose," the company claims, "and every Runzel cord serves its purpose best."

Measuring approximately four by nine inches, the booklet is of convenient size for carrying in one's pocket or for hanging on a hook by means of a string attached to the perforated upper left corner of the booklet. Copies may be secured from the Runzel company, upon request.

▼ ▼

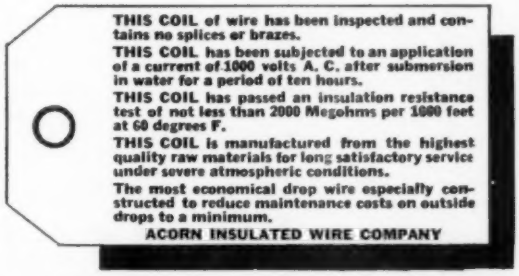
Exhibit of British Telephone Advertising

Those who attend the annual convention of the United States Independent Telephone Association in Chicago next week will have an opportunity to inspect a variety of advertising material used to promote the use of the telephone in England. Included in the exhibit are post cards, leaflets, folders, booklets, an employes' magazine, a catalog of films and a brochure on transatlantic service.

This collection will be shown by Telephonads. M. C. Sellers, manager of Telephonads, says telephone men will be interested in the extent of the British telephone advertising and that advertising men will be impressed with the effective art work and topography.

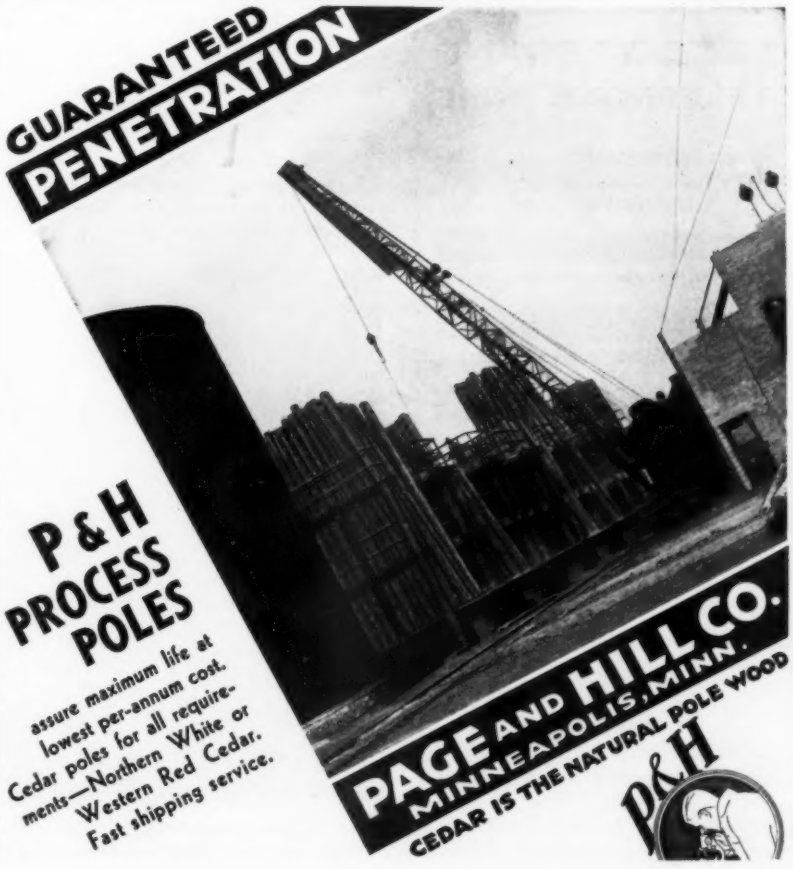
"Of course, some of the English ex-

ACORN WIRE


THIS COIL of wire has been inspected and contains no splices or brazes.
THIS COIL has been subjected to an application of a current of 1000 volts A. C. after submersion in water for a period of ten hours.
THIS COIL has passed an insulation resistance test of not less than 2000 Megohms per 1000 feet at 60 degrees F.
THIS COIL is manufactured from the highest quality raw materials for long satisfactory service under severe atmospheric conditions.
The most economical drop wire especially constructed to reduce maintenance costs on outside drops to a minimum.
ACORN INSULATED WIRE COMPANY

This is a copy of the tag that appears on every coil of ACORN DROP WIRE.

ACORN INSULATED WIRE CO.
225 King Street,
BROOKLYN, N. Y.


GUARANTEED PENETRATION
P & H PROCESS POLES
assure maximum life at lowest per-annum cost. Cedar poles for all requirements—Northern White or Western Red Cedar. Fast shipping service.
PAGE AND HILL CO.
MINNEAPOLIS, MINN.
CEDAR IS THE NATURAL POLE WOOD
P&H

BARTLETT

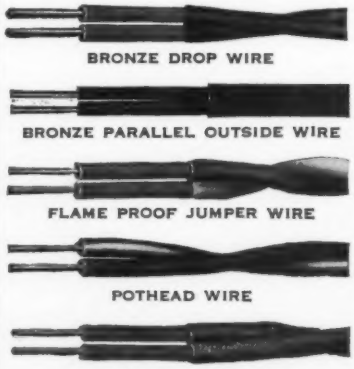
Tree Trimming Equipment

Illustrated are three of the Bartlett Tools for tree trimming. Special attention is called to the Bartlett No. I-W Tree Trimmer with the compound lever. Has enormous cutting power; blades are crucible steel. It is a side cutting tool with a hardened hook. Available in any length from 6 to 16 ft.—in one piece or sectional poles.

BARTLETT MFG. CO.

3803 Grand Ave. Detroit, Mich.

"ECCO" BRAND TELEPHONE WIRE



BRONZE DROP WIRE

BRONZE PARALLEL OUTSIDE WIRE

FLAME PROOF JUMPER WIRE

POTHEAD WIRE

INSIDE TELEPHONE WIRE

MADE BY HABIRSHAW DIVISION OF
PHELPS DODGE
COPPER PRODUCTS CORPORATION

DISTRIBUTED BY

STROMBERG-CARLSON

TELEPHONE MANUFACTURING CO.

ROCHESTER, N. Y.

CHICAGO, ILL. KANSAS CITY, MO.

pressions are odd to us," Mr. Sellers said. "For example, where we would say, 'Have a telephone installed,' they say 'Come on the telephone.' Their efforts are directed toward the same ends as ours—new subscribers, residence extensions, long distance calls, service for farmers. For two years they have been promoting the use of handsets, which they call 'hand microphones.' Some of the advertising is devoted to special services such as connections for ships in dock, and teletypes, which they call teleprinters."

▼ ▼

General Cable Corp.'s General Sales Manager

Howard E. Eagleston has been appointed general sales manager of the General Cable Corp. with headquarters at 420 Lexington Ave., New York City. Mr. Eagleston was formerly Pacific district manager for the company.

▼ ▼

New Gain Permits Drainage from Below Crossarm

"Permanent Pole Tops" is the title of a folder just issued by the Valentine-Clark Corp., of St. Paul, Minn., in which it announces the development of a new type of gain which permits the drainage of water from below the crossarm, preventing the accumulation of excess moisture and insuring more rapid drying of the wood fibers.

The folder states that "the durability of the cedars eliminates to a large extent the possible failure of the untreated portion of the pole above the ground. Where decay often does start, and from where it progresses is a small ledge effect at the bottom of the conventional mitered grain, where moisture has a chance to accumulate below the crossarm.

"During heavy rains the outer sapwood layers of the crossarm section of the pole become thoroughly saturated with water and, being protected by the crossarm from the sun, this ledge dries out much more slowly than does the rest of the pole, setting up an ideal moisture condition for fungi spore germination and development."

The company claims that the new Valentine-Clark gain permits the drainage of water from below the crossarm, preventing the accumulation of excess moisture and insuring more rapid drying of the wood fibers. Since the new gain is slightly concave, only the squared edges of the crossarm bear on the surface when the through bolt is drawn up tight, the arm being sprung slightly to bring it flush with the gain and to keep it tight.

It is also contended that this concave gain permits greater freedom in leveling up the crossarm before setting the arm braces. All V-C gains are treated with green creosote stain as a further protection from decay.

▼ ▼

Some of These Old-Timers Still Active in Industry

The picturesque and historic photograph reproduced on this page was sent TELEPHONY by Ralph S. Mueller, of Mueller Electric Co., Cleveland, Ohio. It was taken in Chicago in the summer of 1903 during the seventh annual convention of the Independent Telephone Association of the United States of America. This horse-drawn "tally-ho" was one of four similar vehicles which transported the convention delegates to San Souci Amusement Park.

Prominent Independent Telephone Men in Attendance at the Seventh Annual Convention of the Independent Telephone Association of the U. S. A., Held 33 Years Ago in Chicago.

This photograph, as well as those of the other three tally-hos, was reproduced in TELEPHONY of July, 1903, in connection with the convention.

With the cooperation of Mr. Mueller (sales agent for the Kellogg Switchboard & Supply Co. at the time the photograph was taken), H. B. McMeal, of the Runzel Cord & Wire Co., and several members of TELEPHONY's staff, identification has been made of 15 members of this party. No doubt some of TELEPHONY's readers will be able to identify others.

Standing, from left to right: The first and second men are unidentified; the third is Leroy W. Stanton. The fourth is unidentified; the fifth is Charles E. Tarte, and the sixth and seventh are unidentified. The eighth is C. H. North and the ninth, A. B. Kratz, Kellogg salesman.

Seated, from left to right on the top deck of the tally-ho, the first is unidentified; the second is J. B. Ward, of Ohio; the third to sixth are unidentified; the seventh is W. H. Crumb. The eighth is R. H. Manson; the ninth and tenth are unknown but the 11th is R. S. Mueller. The 12th is Orrin French; the 13th, Ed Schade, and the 14th, J. C. Kenney.

In the compartments below, the first man to the left is Henry Shafer; the second and third are unknown; the fourth is J. C. Kelsey, formerly of TELEPHONY. The fifth is unidentified; the sixth is P. C. Burns and the seventh, Chas. Wilson. The two men standing in the compartment to the right are unknown. Of those named, seven are known to be dead: Charles E. Tarte, C. H. North, W. H. Crumb, Orrin French, J. C. Kenney, J. C. Kelsey and P. C. Burns.

▼ ▼

Paragraphs

RAY-O-VAC CO., Madison, Wis., manufacturer of dry batteries, has issued a new telephone price schedule, effective September 1. The price sheet contains illustrations and information about the company's products especially designed for use in the telephone field, in addition to the various price listings.

Various products of the company include: Ray-O-Vac No. 6 telephone cells; Ray-O-Vac transmitter batteries for use at operators' positions on switchboards; the French unit type plug-in battery, housed in a single compact carton for mailing direct to subscriber; industrial and dualite flashlight batteries.

GOULD STORAGE BATTERY CORP., of Depew, N. Y., in a recent bulletin directed attention to its new Gould Kathanode battery for automobiles which carries an unconditional guarantee in writing on its "lifetime" construction and use.

BUILT TO "TAKE IT"

THE YEAR 'ROUND

IN HOT WEATHER OR ICY COLD OWENS-ILLINOIS

HEMINGRAY

Pin-Type Glass **INSULATORS** *are OK for long life*

● There's no proving ground for insulators like actual service right up on the poles where nature can hammer away at them winter and summer with cold, heat, rain, frost, wind and snow. That's where Hemingray Insulators have proved they are unaffected by seasonal or sudden temperature changes. They are homogeneous in character and possess only one coefficient of expansion. Write us about your requirements . . . Owens-Illinois Glass Company, Structural Materials Division, Muncie, Indiana.

OWENS-ILLINOIS Glass PRODUCTS

★ *An Invitation*

Delegates to the U. S. Independent Telephone Convention are cordially invited to visit The Lakeside Press during their stay in Chicago.

During more than 40 years of telephone directory making, The Lakeside Press has developed an unusual organization for handling all of the details of this specialized branch of the printing business.

THE LAKESIDE PRESS

R. R. Donnelley & Sons Company

350 EAST TWENTY-SECOND STREET, CHICAGO, ILLINOIS

"Telephony's" Engineering Data

By B. C. BURDEN

Index, Vacuum Tube Practice.
October 10, 1936.
No. 12-A, Page 1.

The New Grid Bias Cell

A recent announcement by the Mallory company of Indianapolis gives the communications engineer a new device, suitable for use in vacuum tube circuits, which has considerable merit. This new unit is known as a *grid bias cell*. It consists essentially of an electrolyte and two electrodes in a

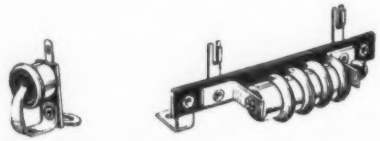


FIG. 1. NEW BIAS CELLS AND HOLDERS

small, acorn-shaped metal container. Fig. 1 illustrates the new cell and holders.

The new cell is essentially a small (no current) battery, capable of furnishing approximately one volt, and is useful for biasing the grids of vacuum tubes. Unlike the regular battery, this new bias cell will not deliver current; that is, it is a voltage device and will furnish only voltage and no current. Whenever an attempt is made to draw current from it, its voltage immediately drops to zero.

It would seem that the new cell would have considerable application in connection with telephone repeater and carrier equipment. Vacuum tubes used for both of these telephone applications are now in most cases biased with small

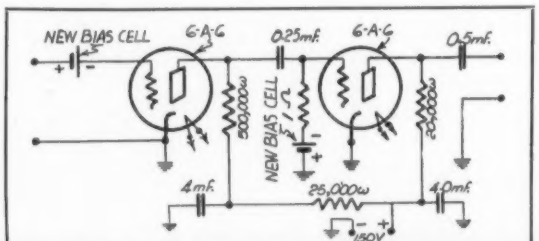


FIG. 2. TYPICAL USE OF BIAS CELLS

"Telephony's" Engineering Data

By B. C. BURDEN

Index, Vacuum Tube Practice.
October 10, 1936.
No. 12-A, Page 2.

flashlight type bias batteries. By connecting one or more of the new bias cells in series with the grid of vacuum tubes used for repeater or carrier applications, the use of batteries is dispensed with, and a device having almost indefinite life takes their place.

The principal use for the new cells in connection with radio sets is for the furnishing of grid bias for type 76 or 2A6 tubes, such as are used in the first audio stages of modern high-gain AVC receivers. Considerable simplification in circuit design is possible with the new bias cells as they permit connecting a cathode directly to ground rather than through the usual self-biasing resistor and thus tend to stabilize the operation of the tube and prevent oscillation difficulties.

In the design of pre-amplifier audio circuits, the new bias cell is particularly useful as it reduces a great deal of the hum which results when self-biasing, by means of cathode resistors and by-pass condensers, is used. Because bias cells will not furnish current, they cannot be used on any tubes where the grid swing is more than one volt (unless additional bias cells are connected in series). Fig. 2 illustrates the typical use of the new grid bias cell. The new cells have a resistance ranging from 11,000 to 50,000 ohms. The cost of these cells from most supply houses is 24 cents, which includes the holder.

Detailed Characteristic Data

Voltage Characteristic: The no-current potential of the new bias cell is one volt plus or minus 10 per cent.

Current Characteristic: The cell is strictly a potential, or voltage cell and should not be used in circuits in which currents of over one microampere is drawn from the cell.

Temperature Characteristic: The cells may be used in temperatures from 40° below zero to 120° above zero, Fahr. The voltage of the cell remains reasonably constant throughout this wide temperature range. It is recommended, however, that wherever possible the bias cell be placed in the coolest location.

Humidity Characteristic: Bias cells exhibit no change in characteristics when exposed to a relative humidity of 90 per cent at 120° F.

Impedance Characteristic: The grid bias cell is non-reactive at audio frequencies and the D.C. resistance ranges between 11,000 and 50,000 ohms.

"Telephony's" Engineering Data

By B. C. BURDEN

Index, General.
October 10, 1936.
No. 38-A, Page 1.

The Use of the Slide Rule

There is a general impression that the slide rule is a complicated instrument, requiring a thorough knowledge of mathematics in order to be able to use one successfully. This is not true; on the contrary, the slide rule is not only very easy to understand and use, but will enable those unfamiliar with the more advanced phases of mathematics to handle problems, ordinarily encountered with sufficient accuracy and a minimum of effort.

The slide rule is primarily intended for the multiplication, division, squaring and extraction of square roots of numbers. It can also be used to perform other mathematical operations, such as trigonometric problems; however, the major use is for the four operations mentioned.

The slide rule consists essentially of a stock, slide, and runner, as shown in Fig. 1. The stock is the body of the rule in which the slide can be moved back and forth. The slide is the part that can be slid back and forth in the stock. The runner is the glass or celluloid window with a fine hair line in its center, and is arranged so that it can be moved back and forth on the rule.

The face of the rule, as shown in Fig. 1, contains four scales which are known as the A, B, C, and D scales, the top scale being A, the next one B, etc. The slide or movable part of the rule contains scales B and C and the body of the rule scales A and D.

Unique Furnaces

are chosen by public uitilities everywhere because of their astonishingly long life in the field. We'll name telephone and telegraph companies who have in use today hundreds of the Unique No. 55 *Kerosene* furnace, and too, our records prove purchases of over 1000 units by single customers. A fast heater—50 lbs. of solder melted in 10 minutes—but more important is the little attention they require while on the job. Gasoline or Kerosene. Literature?

UNIQUE MFG. CO., Inc.
221 Whiting St. Chicago, Illinois

Condensed News

Franchises

NEVADA, IOWA—An ordinance, granting a 25-year franchise to the Iowa Continental Telephone Co., will be voted on at a special election on November 3.

MITCHELL, S. D.—The Dakota Central Telephone Co. has been granted a 20-year franchise to operate within the city here.

Telephones

WASHINGTON, D. C.—The Chesapeake & Potomac Telephone Co had 206,371 telephones on July 31, in this city, a net gain of 181 telephones over the previous month. On July 31, 1935 there were 195,533 telephones in service. Telephone users in Washington made 24,349,000 calls in July, as compared with 20,933,000 for July last year.

LAKELAND, FLA.—The Peninsular Telephone Co. reports a net gain of 11 stations during August instead of the usual loss experienced in that month.

NEW YORK, N. Y.—The General Telephone Corp. reports for its subsidiaries a gain of company-owned telephones of 1,340 for the month of August, 1936, compared with a gain of 840 telephones, for August, 1935. The gain for the first eight months of 1936 totals 13,177 telephones, or 4.22 per cent, compared with a gain of 7,900 telephones, or 2.63 per cent for the first eight months of 1935. The subsidiaries now have in operation 325,495 company-owned telephones.

Financial

WASHINGTON, D. C.—Net earnings of the Chesapeake & Potomac Telephone Co. in July were slightly lower than in July a year ago, according to the monthly report recently filed with the District of Columbia Public Utilities Commission, the balance before dividends standing at $138,546 in comparison with $145,219 in the like period a year ago. Operating revenues totaled $871,847, against $82,993, but the gain was largely offset by heavier operating expenses, $634,770 as compared with $600,804, leaving a net operating income of $153,796 in July of this year in comparison with $169,958 in July, 1935. Operating taxes called for $74,281, against $57,232 a year ago. Interest deductions were smaller, $15,985 comparing with $25,291.

Operating revenues for the first seven months of 1936 were also reported to the commission. Operating revenues totaled $6,203,924, against $5,867,243. Operating expenses totaled $4,367,512, compared with $4,107,422. After all deductions net revenues before dividends amounted to $1,214,530, as compared with $1,124,147 in the first seven months of 1936.

CHARITON, IOWA—The Lucas County Telephone Co. has called for payment all of its outstanding bonds. Holders were asked to present these bonds for payment October 1 to the National Bank & Trust Co., of Chariton. A. J. Adams is secretary of the Lucas County company.

BOSTON, MASS.—Net operating income of the New England Telephone & Telegraph Co. for July increased $176,717 over the corresponding month of 1935 to a total of $1,121,765. In the first seven months this year operating net

UNIQUE MFG. CO., Inc.
221 Whiting St. Chicago, Illinois

Impedance Characteristic: The grid bias cell is non-reactive at audio frequencies and the D.C. resistance ranges between 11,000 and 50,000 ohms.

FIG. 2. TYPICAL USE OF BIAS CELLS

Materials and Manufacture

Conductors are selected to meet rigid specifications based on telephone requirements and every shipment is tested to see that those specifications are met. Insulating materials are all of premium quality and constantly checked for adaptability to telephone needs, and must meet our specifications, which result in long service for Whitney Blake Telephone Wires. Throughout the entire manufacturing process we use the latest and best methods and machinery, supplementing this with a series of tests and inspections in every department, plus a final series of tests before we apply the Whitney Blake lead seal of quality.

Telephone Wire
RUBBER COVERED
COPPERWELD - BRONZE - COPPER
DROP - INSIDE and BRIDLE

WB

MANUFACTURED BY
The Whitney Blake Co.

SOLE SELLING AGENTS IN U. S. A.
Graybar
ELECTRIC COMPANY
FOREIGN DISTRIBUTORS: International Standard Electric Corporation, 67 Broad St., N. Y. C.

● Guaranteed
● Noiseless
● Manhole Frames and
● Covers

Grey Cast Iron Manhole Frames and Covers may now be purchased with an unqualified agreement to replace any breakages from any cause whatsoever for a period of ten years after invoice date.

Send your problems to our Department of Research and Developments.

Write for Catalogue No. 107.

● Flockhart Foundry Co.
● 75 Polk Street
● Newark, N. J.

WHITALL TATUM INSULATORS

USED for years on telephone, telegraph, railroad and lighting company distribution lines . . . a dependable source of supply for uniform, well-designed transparent glass insulators.

WHITALL TATUM CO.
Glass Manufacturers Since 1836
225 Varick St. New York

SIX REASONS for the growing use of Le Carbone No. 517 Dry Cell on magneto board power supply for operators' transmitters: 1. Better communication; 2. 200 ampere hours and more per cell; 3. No losses in storage; 4. Flat voltage characteristics; 5. Fewer renewals; 6. Light weight per ampere hour.

LE CARBONE COMPANY

General Office and Works, Boonton, N. J.

New York Pittsburgh Chicago
St. Louis San Francisco

LE CARBONE

Air Depolarized

CARBON CELL

BASHLIN

LINEMEN'S EQUIPMENT

Don't miss our splendid display of body belts, safety straps, climbers, pliers, etc.

Room 2563
HOTEL STEVENS
Oct. 13-16

"There is no Saturation Point in Right priced Quality Goods."

W. M. BASHLIN CO.
GROVE CITY, PA.

totaled $7,754,096, against $7,299,731 in the same period last year.

WALPORT, ORE. — The Waldport Telephone Co. recently filed an application for permission to increase its capital stock from $2,000 to $10,000.

Construction

LOGANSPORT, IND. — A proposed construction and rehabilitation program of the Indiana Associated Telephone Corp. is expected to involve the expenditure of more than $200,000 and the installation of dial equipment for Logansport. The new exchange building will be air-conditioned throughout. June 1, 1938, is the tentative date for completion of the program.

Recent repair work has included the laying of new cables, replacing telephones, re-routing lines, etc.

Walter J. Uhl is district manager in

Statement of the ownership, management, circulation, etc., required by the Act of Congress of March 3, 1933, of TELEPHONY, published weekly at Chicago, Ill., for October 1, 1936.

State of Illinois, County of Cook, ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared S. R. Edwards, who, having been duly sworn according to law, deposes and says that he is the editor of TELEPHONY and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher, Telephony Publishing Corp., 608 S. Dearborn St., Chicago; Editor, S. R. Edwards, 608 S. Dearborn St., Chicago; Managing editor, S. R. Edwards, 608 S. Dearborn St., Chicago; Business manager, H. D. Fargo, 608 S. Dearborn St., Chicago.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

Telephony Publishing Corp., 608 S. Dearborn St., Chicago; H. D. Fargo, 608 S. Dearborn St., Chicago; S. R. Edwards, 608 S. Dearborn St., Chicago; H. D. Fargo, Jr., 608 S. Dearborn St., Chicago.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

H. D. Fargo, 608 S. Dearborn St., Chicago, Ill.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

S. R. EDWARDS,
(Editor.)

Sworn to and subscribed before me this 30th day of September, 1936.

(Seal) FLORA KLINE,
Notary Public.

(My commission expires March 14, 1940.)

Rates for ADVERTISEMENTS in this section furnished upon request

CABLE—LEAD ENCASED

Kennecott Wire and Cable Company, Subsidiary of Kennecott Copper Corporation (formerly American Electrical Works), Phillipsdale, R. I.—Paper telephone cable, switchboard cable, bare copper wire. Chicago office: 20 N. Wacker Drive; Cincinnati: Traction Bldg.; New York: 100 E. 42nd St.

CORDS AND WIRE

Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago — Telephone and Switchboard Cords, Flame-proof Jumper Wire, Switchboard Wire, Interior Telephone Wire. W. L. Runzel, President, has devoted over 40 years to the making of fine telephone cords.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

International Creosoting and Construction Co., Galveston, Texas — Creosoted Southern Yellow Pine Poles. Plants: Beaumont and Texarkana, Texas.

Jordan Bros. Lumber Co., Box 84, Norfolk, Va.—Virginia White Cedar Poles. Plain or charred and creo-treated butts.

MacGillis & Gibbs Company, Milwaukee, Wis.—Northern White and Western Red Cedar Poles. Plain or butt-treated. Immediate quotations on request.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles. Plain or butt treated.

H. Sigalet & Company, Ltd., Lumby, B. C., Canada—Western Red Cedar Poles. Plain or Butt treated.

Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or Butt treated.

charge of the Logansport plant. The headquarters of the company are located at Lafayette, with J. F. O'Connell, president; F. O. Cuppy, vice-president and general manager; Eric Brooke, commercial and traffic superintendent and W. C. Steinmetz, plant superintendent.

COLUMBUS JUNCTION, IOWA—Work was commenced the middle of last month on the improvements to be made on the Iowa-Illinois Telephone Co. exchange building in Columbus Junction.

The top story of the brick building is being removed and a new roof and ceiling will be built with the entire front also rebuilt with brick veneer and plate glass. The first floor will be made into the latest approved plan for a modern telephone office. The walls on the east, west and south will be covered with Portland cement stucco. A new hot water heating plant will also be installed.

MONROEVILLE, OHIO — The Northern Ohio Telephone Co. has commenced work on a thorough overhauling of the Monroeville system, at a cost estimated to be $25,000. A business block has been purchased and the system will be converted into the dial system, all calls to be made through Norwalk, four miles away, where the company will send its present Monroeville operator.

The Monroeville Telephone Co. was absorbed by the Northern Ohio several years ago. The original company originated from a short amateur line which George A. Hass constructed from his home to his place of business, more than 40 years ago.

BRYAN, TEXAS—Improvements in service facilities at College Station and in Bryan are being made by the Southwest Telephone Co., according to M. E. Atkins, local manager. The improvements, it is estimated, will cost approximately $21,000.

GRAPELAND, TEXAS—The Crockett Telephone Co., of which J. S. Cook is manager, is rebuilding its system here and installing common battery service.

SAN DIEGO, TEXAS — Work will be started in the near future on a new telephone line to Seven Sisters oil field in Duval county, according to an announcement by Miss Emma Garcia, manager of the Del Rio & Winter Garden Telephone Co. here.

It has not yet been decided if the new line will connect with Freer or San Diego exchanges.

Miscellaneous

TUSKEGEE, ALA.—The Southern Bell Telephone & Telegraph Co. has agreed to provide a common battery telephone system for the city of Tuskegee upon the signing of a petition by a majority of the local subscribers. Installation of the new system will result in an increase of 50 cents per month in the rates for business telephones and an increase of 25 cents per month in the rates for residential telephones.

The Tuskegee Civitan Club, of which J. D. Randall is president, is sponsoring the movement for this improved system. This is one of the club's major projects for the betterment of Tuskegee.

BATH, ILL.—The exchange of the Bath Telephone Co. has been sold to Kenneth Blodgett, of Havana. Mr. and Mrs. Blodgett assumed charge of the exchange on October 1.

GENESEO, ILL.—The Geneseo Cooperative Telephone Co. this year has cut over nearly all telephones to common battery service, five party-line and about 20 private line telephones remaining magneto. There are about 98 switching telephones inside the corporate limits, known as service lines. They are multiparty lines and are mutually owned.

LERNA, ILL.—Mr. and Mrs. Kenneth Shoot, who operate the Lerna Mutual Telephone Co., have acquired the Janesville Telephone Co. from the Dr. C. H. Harwood estate, taking possession October 1.

Mr. and Mrs. Shoot will employ an operator at Janesville and will continue to reside here and operate the Lerna switchboard. They plan to install a new switchboard at Janesville and make quite a number of other improvements.

The Janesville Telephone Co. has between 75 and 100 subscribers.

TIPTON, IOWA—Henry Martens in a damage action against the Prairie Bell Telephone Co. and its subscribers, asks $5,500 damages as result of an accident nine miles south of here on April 19. The petition alleges Mr. Martens was hurled from his truck when he was caught by a low hanging telephone wire across the highway.

CERESCO, MICH.—The Michigan Bell Telephone Co. has discontinued its exchange here, handling the telephone calls for Ceresco through the Marshall exchange.

MUSKEGON, MICH.—B. R. Snyder, former Muskegon exchange wire chief of the Michigan Associated Telephone Co., has been named plant engineer. In his new position Mr. Snyder will spend much of his time traveling throughout

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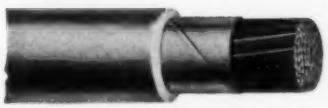

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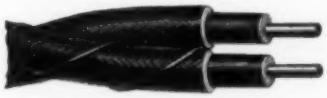

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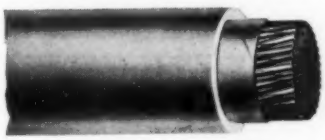

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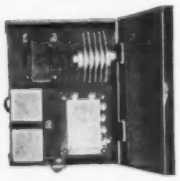

lower Michigan directing construction in various exchanges. He has been employed by the present company and predecessor concerns here for many years.

E. L. Swartz, formerly of the Automatic Electric Co., has been named Mr. Snyder's successor here. Mr. Swartz has been working in the Muskegon exchange in connection with new installations here for the past two months.

TARRYTOWN, N. Y. — Michael T. Cannon retired a short time ago as wire chief of the New York Telephone Co. here, after having been in the telephone field for 50 years. He was presented with a 50-year service pin.

Born in Nyack, N. Y., Mr. Cannon left school as a boy to become an apprentice for the Tuthill Shoe Co., but soon became night operator in the Nyack telephone exchange which position he filled for three years. After two years of maintenance work in New York City, he was assigned to troubleshoot the Tarrytown exchange.

Mr. Cannon has a record of only three hours' lost time in his 50 years of service. He was injured twice in falls from poles and considered dog bites a matter of course, claiming an average of one a month.

BELLEVUE, OHIO — Nap T. Videan is now assistant to the commercial superintendent of the Northern Ohio Telephone Co., having resigned his position as assistant cashier of the Union Bank & Savings Co. with which he was connected for several years. Mr. Videan, with headquarters here, is studying the Northern Ohio system with a view of expanding its public service.

VAN WERT, OHIO — W. G. McKeddie, superintendent of equipment of the Van Wert Home Telephone Co., has resigned in order to devote full time to his electrical appliance store.

Mr. McKeddie was with the telephone company for 22 years, during which time he completely rebuilt the plant and supervised the installation of the new toll board.

HARRISBURG, PA.—Following a meeting of stockholders of the United Telephone and Island Telephone companies recently, it was announced that the United company will absorb the Island company, which serves 14 patrons in the vicinity of Clarks Valley through the Duncannon exchange.

HOLLAND, TEXAS — The Rural Telephone Co. here was recently purchased by R. M. Pinkston, of Hemphill, who took charge on September 1. Mr. Pinkston plans to do considerable repair and rebuilding work.

WHITTLESEY, WIS. — The Whittlesey Telephone Co., owned by Phillip McNamar of Whittlesey and George McNamar of Medford, has been purchased by the Midway Telephone Co. of Medford. About 50 patrons are affected by the sale. The new management will replace the present system with a dial system and the work of changing to the other system has been going on for some time. The office at Whittlesey will be discontinued December 1.

Obituary

SANDWICH, ILL.—E. V. Wallace, for 25 years manager of the Northern Illinois Telephone Co., died on September 30, at the Mercyville sanitarium, near Aurora. He was 69 years old. He was a former resident of Chicago. His widow and three sons, Oliver Wallace of Oak Park, Dr. James H. Wallace of River Forest, and Robert A. Wallace of New York, survive him.

HARRISBURG, PA.—Franklin W. Figner, formerly of Germantown, a retired engineer of the Bell Telephone Co. of Pennsylvania, fell dead on September 16, while playing golf on the Colonial Country Club course. He was 56 years old.

Mr. Figner was graduated from the Engineering School of the University of Pennsylvania in 1902. He retired 2½ years ago.

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Western Elec. No. 122 External post connection Rec. without cord @..... .65
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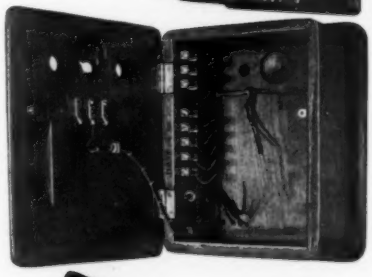

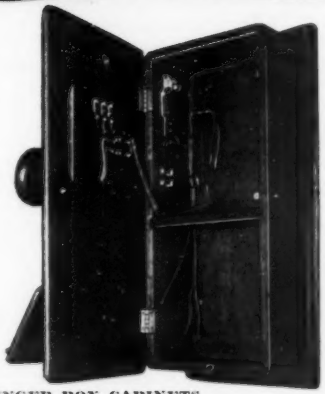

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WANTED—500 Western Electric No. 14-A or Kellogg No. 41-A receivers with or without shells and caps. Must be in good condition. Box No. 8571, TELEPHONY.

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TROUBLEMAN, 20 years' experience on C. B. and magneto exchanges; moderate salary; experienced operator if essential; go anywhere, Indiana preferred. Best of references. Address Fred J. Hoge, Box 13, Leiters Ford, Indiana.

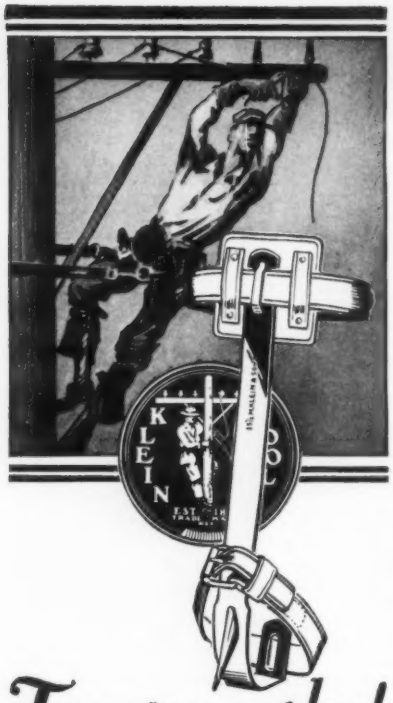
POSITION WANTED—Experienced in installation and repair, P. B. X. boards, also records and test board. Best of references. Will go anywhere. Address 8565, care of TELEPHONY.

POSITION DESIRED by telephone engineer with executive experience, aged 38, college graduate, now employed in telephone engineering with 14 years' experience. Address 8564, care of TELEPHONY.

POSITION WANTED by experienced telo accountant and auditor, age 30, with excellent connections and references. Has held junior executive position with larger Independent companies. Desires to make a change to a company appreciating competence and loyalty. Address 8555, care of TELEPHONY.

EXPERIENCED line and repair man wants work or will lease a place on monthly payments. Go anywhere; good references. Address 8554, care of TELEPHONY.

POSITION WANTED—Young man, telegraph and telephone inside maintenance and engineering experience. Have excellent record in Bell, foreign and international service. Address 8488, care of TELEPHONY.



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Telephony

October 10, 1936

60th YEAR of THE TELEPHONE

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To these manufacturing organizations, which now supply the Independent telephone operating field with the finest and best of telephone switching equipment and subscribers' sets, TELEPHONY dedicates this section of its 1936 pre-convention issue. It records the history and achievements of the manufacturers during the 42 years of the Independent industry, the material being supplied by the companies.

Stanley R. Edwards

Automatic Electric Co. And Associated Companies

AT THE intersection of Morgan and Van Buren streets, on Chicago's west side, stands a commanding group of four large buildings. These structures house the manufacturing departments, development laboratories, general offices and sales headquarters of a group of companies known collectively throughout the Independent telephone field as "Automatic Electric."

The principal company of this group—Automatic Electric Co.—is best known as the originator and foremost world exponent of the Strowger automatic system of telephony. In recent years, however, the company has steadily expanded the scope of its manufacturing facilities until today it produces almost every conceivable item of telephone central office and substation equipment in its own shops and under the direction of its own staff of experienced telephone engineers and designers.

Its associated sales companies also act as distributors of a wide variety of high-grade telephone construction materials and supplies. They thus offer to the telephone field "A Complete Telephone Equipment and Supply Service," embracing every type of telephone apparatus required for the construction, operation and maintenance of telephone properties.

The history of Automatic Electric Co. began with the development and installation, in 1892, of the first commercially successful automatic telephone system. This was an exchange of 75 lines manufactured and installed at La Porte, Ind., by the Strowger Automatic Telephone Exchange—predecessor of Automatic Electric Co.

The opening of this exchange was a significant and far-reaching event in telephone history because it represented the beginning of a trend which was destined eventually to become a movement world-wide in scope and of great economic importance. Other installations followed in rapid succession. Most of them were small, but each represented a distinct technical advance over those that had gone before.

In 1901, Automatic Electric Co. was formed to take over the business and patents of the original concern. The company established development, engineering and production on a sound and practical basis. Inquiries and orders began to come in at a substantial rate; technical difficulties were slowly but surely being ironed out. A new and promising industry was launched.

One of the notable features of the early development of the Strowger automatic system was its remarkable flexibility. To design and produce an automatic system to set up connections between simple individual lines was difficult enough. But the problems of adapting that equipment to the complex conditions imposed by such special require-

Automatic Electric Co.'s Factories, General Offices, Sales Headquarters and Development Laboratories at 1033 West Van Buren Street, Chicago.

ments as multi-office trunking, party-line selection, measured service, rural line service and private branch exchange operation seemed insurmountable.

Curiously enough, once the basic form of the Strowger system was determined, solution of these problems came with relative ease. No sooner was the claim made that Strowger automatic equipment was not capable of performing a certain function, than forthwith the inventors found a way for the system to meet that need, incorporating the necessary apparatus modifications into the design of the system.

As a result, within a score of years after they had installed the first exchange, Automatic Electric engineers had established a successful system of automatic switching which they could adapt to exchanges of any size or type. The company was then ready for commercial exploitation of the system on a large scale, as a proved method of enabling telephone companies to render good service at low cost.

From that time to the present day, there has been a steady program of conversion of both small and large exchanges to Strowger automatic operation. At first, the use of the system was confined to the Independent companies in the United States. Soon telephone administrations abroad became interested in the idea. Installations were made in England, Germany, France and Australia.

By the early '20s many of the large telephone administrations in the world, including the governments of Great Britain, Germany and Japan, as well as large private companies in the United States, Brazil, Cuba, Canada and India had announced plans for the conversion of exchanges from manual to automatic operation on a Strowger basis.

To place the company in a position to fulfill its purpose of maintaining a complete telephone equipment and supply service, the Automatic Electric staff has steadily expanded its scope of operations to include the development, engineering and manufacture of every needed type of equipment for central office and subscribers' stations. To attempt to list these various products in any detail would be futile, but it may be useful to classify them broadly, so as to illustrate the completeness with which they cover the needs of telephone companies.

The development, engineering, production and installation of automatic telephone equipment for use in cities of large or moderate size constitute an important part of the company's operations. These activities include not merely the engineering and manufacture of the automatic switching equipment for setting up connections within the local exchange area, but also all of the auxiliary apparatus and devices, without which no telephone exchange is complete. This includes such apparatus as the necessary power supply equipment, special service switchboards, toll-switching equipment, measured-service apparatus, distributing frame and terminal equipment, as well as equipment for the interconnection of manual and automatic offices during the transition period.

THEN—An Automatic Telephone of 1892

AND NOW—
Types 34A3 and 35A5 Monophones

Because of customer preference or peculiar local commercial or traffic conditions, there are places where manual operation is desirable. Recognition of this fact has prompted Automatic Electric Co. to give constant attention to the development and manufacture of apparatus of this type.

At the present time the company's manual production department is operating at high capacity, producing a wide variety of private branch exchange switchboards, manual central battery switchboards and toll switchboards, for installation both in this country and abroad.

Beginning some 20 years back, Automatic Electric engineers made a comprehensive study of rural operating conditions in connection with the economic adaptation of automatic equipment to very small exchanges. Their aim has been to design and install small automatic systems which would operate without constant attendance. The results have been most satisfactory.

Plans have been worked out and put in successful practice, whereby groups of small exchanges have been replaced with small automatic units, displacing all operating labor at these points and centralizing at a common point toll service and all other services requiring human attention. One Independent company now operates a total of over 50 automatic exchanges of this kind, all of them normally unattended.

In other cases, the company has installed what are known as R-C-X's, or remote controlled exchanges. These are small automatic switching units which serve outlying rural communities, but which are controlled not by dials on the subscribers' telephones but by control equipment in the nearest or most convenient attended exchange. The economic effect of this is to eliminate operating expense in those exchanges where there is not enough traffic to keep an operator busy and where it is desired to render service 24 hours a day.

The application of automatic switching equipment to private exchange operation has gained considerable momentum during the last few years. In such exchanges automatic switches are used for making quick, accurate automatic connections between local stations of the private exchange, while an attendant's cabinet is usually furnished for supervising calls to and from the public exchange.

New, small units are also available for use without an attendant's cabinet, incoming calls from the public exchange being picked up from any telephone and transferred to the proper terminating point. These newer types of private automatic exchanges operate in connection with either manual or central battery central offices.

The Automatic Electric staff has not confined its efforts to the development and manufacture of switching equipment but has been in the forefront in modernizing and beautifying the telephones on subscribers' premises. The Automatic Electric Monophone, the first of the modern molded handset telephones to appear in this country, is an excellent example of its work along this line.

Associated Electric Laboratories, Inc., Occupies the Entire Sixth Floor at 1033 West Van Buren Street, Chicago. This Member of the Laboratories Staff Is Setting Up a Machine for an Endurance Test on Dials.

Automatic Electric telephones also include a complete range of conventional telephones for central battery and magneto service, magneto Monophones, outdoor telephones, flush wall telephones and many other special designs for special uses. Most of the Monophone models are available also in colored, molded plastics, with gold or chromium-plated fittings.

It has always been the company's policy to manufacture completely in its own shops as much as possible of the vast variety of parts and equipment which enter into a complete central office installation, and in any event to formuate its own specifications for the manufacture of equipment which the company is obviously not set up to produce. In this way the company maintains complete control over both quality and production costs.

A complete central office installation will consist, for example, not only of the switchboard proper, but also a power plant, including storage batteries charging machine and power board. There will also be accessory equipment such as distributing frames, wire chief's test desks, toll switchboards, meter racks, toll test panels, etc. All of this apparatus, with the exception of certain of the power equipment, is made in the company's own shops to the specifications of its own engineering staff.

Expansion of manufacturing in these miscellaneous lines is constantly in progress. As an example, a little over a year ago the company, through the acquisition of the business and products of the Sands Electric Co., entered into the manufacture of telephone protection apparatus and is now furnishing a complete line of substation protectors, cable terminals, building terminals, fuses, central office protectors and similar items of that class.

Other Automatic Electric products that may be properly classed under the "miscellaneous" heading include such things as switchboard cables, enameled wire, loading coils, telephone and switchboard cords, repeating coils, battery chargers, battery eliminators, etc.

Automatic Electric Co. products are sold in the United States through American Automatic Electric Sales Co. This company has headquarters at 1033 West Van Buren street Chicago, and has sales offices in all principal cities. In addition to a warehouse in Chicago, it maintains branch warehouses at Kansas City, Mo., San Francisco, Calif., and Richmond, Va.

As previously mentioned, this company also acts as distributor for a wide variety of construction materials and supplies manufactured by other companies.

Sales of Automatic Electric products to foreign countries are handled through the company's export distributors, Automatic Electric Sales Co., Ltd., whose headquarters are also at the Chicago address. This company has associated sales companies and agents in practically every country in the world.

Automatic Electric Co.'s research and development activities are centered with Associated Electric Laboratories, Inc. This company maintains extensive facilities both for pure physical research and practical development of telephone products.

Its personnel consists of mature telephone men of life-long experience and with a background of high technical training. It is such men as these who have been responsible for such developments as the Monophone, the type 24 ("thousand year") dial, the Automatic Electric remote control board, and the hundreds of improvements which have been made in the company's standard line of central office equipment.

A Battery of Molded Plastic Presses in Automatic Electric Factory, Where Monophone and Other Telephone Parts Are Molded Under High Temperature and Tremendous Pressure.

OGUE, Vice-President of
rican Automatic Electric
Sales Co.

H. L. HARRIS, President of Automatic Electric Co. and President of American Automatic Electric Sales.

W. F. BENOIST, Vice-President of the Automatic Electric Co., Chicago.

P. W. CONRAD, Vice-President of the Automatic Electric Co.

C. C. MOORE, District Sales Manager, Chicago District.

L. J. GADDIS, Division Sales Manager, Western Division.

J. S. MURRAY, Division Sales Manager, Eastern Division.

J. K. BARRINGTON, Division Sales Manager, East Central.

EMUND, Vice-President
merican Automatic Elec-
Sales Co., Chicago.

T. S. GARY, Vice-President of the American Automatic Electric Sales Co., Chicago.

J. W. SHIPMAN, Vice-President, American Automatic Electric Sales Co. and Automatic Electric Co., Ltd.

T. C. THOMPSON, Vice-President of American Automatic Electric Sales Co.

Kellogg Switchboard & Supply Co.

THE KELLOGG Switchboard & Supply Co. was incorporated under the laws of the state of Illinois in 1897. At that time the basic patents that had been responsible for a monopoly in the use as well as in the design and manufacture of telephone equipment were about to expire. It is a remarkable fact that there were then only approximately 400,000 telephones in use in the whole country.

It required foresight and courage to get together an organization qualified to embark upon the development, manufacture and sale of telephone apparatus at that early date. The venture had to be undertaken in the face of the strongest group of capital, with well-trained engineers and patent lawyers; an organization that had planned for 17 years just what its course should be when its first patents should expire, and that had built up successive defenses against encroachment upon the business it had established.

Milo G. Kellogg, whose name the company bears, laid his plans early to embark in the telephone business—just as soon as the patent situation would permit. For many years prior to the expiration of the Bell patents he had developed improvements in the art of telephony; and when the day came that the Kellogg company was organized, he transferred 148 patents and patent applications, representing his own inventions, to the new company. He had made these improvements while planning the financial and other business details of the new project.

For some time prior to the actual incorporation, Mr. Kellogg had surrounded himself with a corps of engineers and laboratory assistants to develop the commercial apparatus that would constitute the products of the Kellogg company. The result of this aggressive policy was a complete line of telephone equipment practically ready for manufacture at the time of incorporation in 1897.

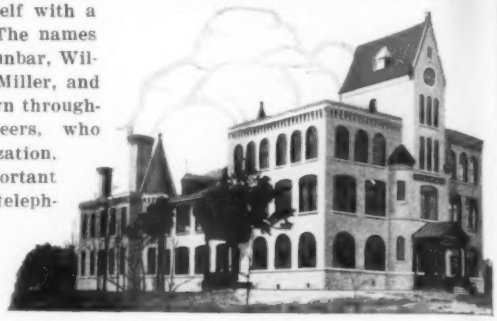
Mr. Kellogg was extremely forehanded and foresighted in this preliminary development of a complete line of apparatus. It should be remembered that this was an undertaking fraught with difficulties, due to the many patents of the Bell company that had not expired, and that this pioneer organizer and developer of a new line had to rely on his inventive genius.

To help surmount these difficulties Mr. Kellogg surrounded himself with a notable group of engineers. The names of such men as Francis W. Dunbar, William W. Dean, Kempster B. Miller, and Franz J. Dommerque are known throughout the industry as pioneers, who through the Kellogg organization, played a leading and important part in putting Independent telephony on a sound basis from its very inception.

The Kellogg company's first factory was located at Highland Park, Ill., in a building almost too small to manufacture its first large switchboards. It was in the Highland Park plant that the large divided multiple switchboard of the Kinloch Telephone Co. of St. Louis, Mo., was manufactured. This was in 1897, and the divided multiple plan was adopted to provide capacity and to avoid the multiple switchboard patents of the Bell company.

This was the largest multiple common battery switchboard ever built up to that time. The old-timers tell how this board was assembled in every available foot of space in the cramped quarters of the Highland Park plant. But, when it was installed in St. Louis it made a most remarkable showing and gave four-second service.

The experiences in building this large divided multiple switchboard in the Highland Park plant demonstrated the urgent necessity for larger quarters, and after about one year the company moved to the corner of Congress and Green streets in Chicago. In fact, the company was literally forced from its small plant in Highland Park by the rush of business that came from this new field of Independent telephony.



Original Kellogg Factory at Highland Park, Ill.

Some of this early work of the Kellogg company in the Independent field was featured with photographs of the switchboard in TELEPHONY of January, 1904. This early article beginning on page 48 says:

The Kellogg Switchboard & Supply Co. has given Independent telephony:

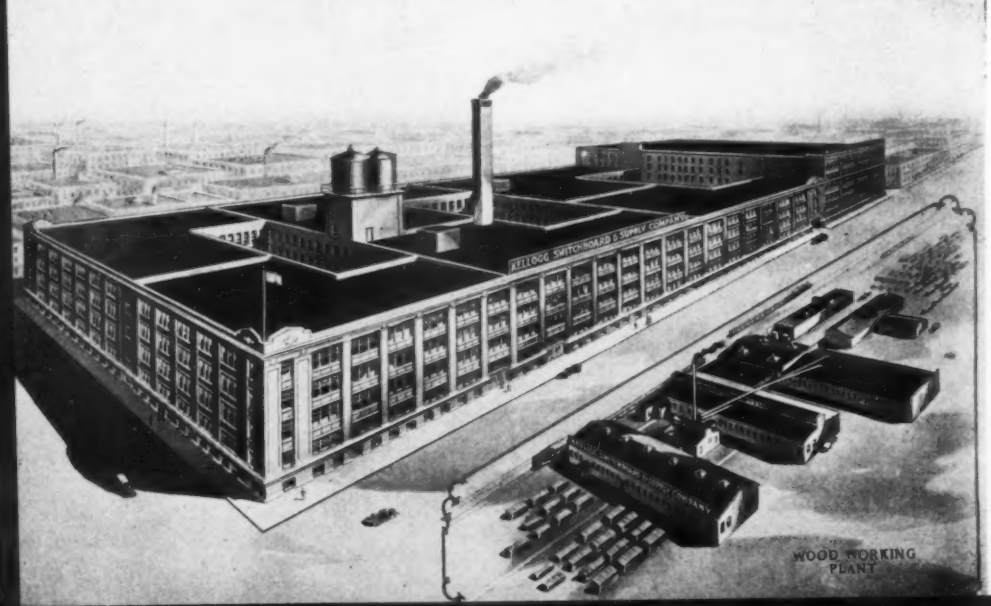
I. The first large switchboard in the Independent field, at the time the largest switchboard in the world.

The exchange referred to is the St. Louis, four-division switchboard, which was installed in 1897 and has been in service ever since and at present is giving four-second service, which is considered rapid even for later type switchboards.

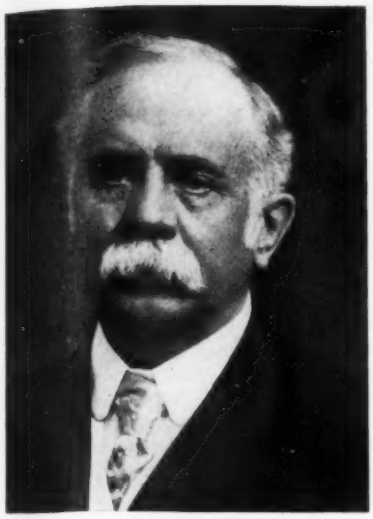
The success of the Independent industry depended on the successful operation of this switchboard and all the capital now invested in Independent telephony was in a great measure influenced by the success of this exchange.

II. The first large double-lamp supervisory switchboard, which was installed in Cleveland and followed by Pittsburgh and Baltiburgh and Baltimore installations.

111. The first large multiple common battery switchboard, installed at Columbus, Ohio.



Present Home Office and Factory of Kellogg Company at Chicago, with Insert Showing the Company's Cassopolis, Mich., Woodworking Plant.



MILO G. KELLOGG, (Deceased), Founder of the Kellogg Company.

IV. The first lamp signaling switchboard, installed at Scranton, Pa. In introducing the lamp line signal into the Independent field the Kellogg company was forced to fight all the other manufacturers, who advocated the use of mechanical or visual signal type signals, which were necessarily much slower in action.

V. The first two-wire common battery multiple system, installed in London, England, and in Philadelphia, Pa. This system not only marks a revolution in switchboard building in the Independent field, but is far superior to anything ever produced.

VI. The first large single multiple switchboard, installed at Buffalo, N. Y. This switchboard has from 6,000 to 8,000 more lines than any other switchboard employing latest methods of operation.

VII. The first successful four-party line selective system using the harmonic system of ringing. This system entirely does away with interference and, being bridged across a metallic line circuit, does not require a third or ground connection.

VIII. The first improvement in transmission apparatus so as to equip all telephones, whether magneto call or common battery, to the longest distance service. This is made possible by specially constructed transmitters, receivers and talking circuit.

Some of the notable large common battery switchboards installed at an early date by the Kellogg company in cities of over 50,000 are as follows:

Albany, N. Y.; Baltimore, Md.; Buffalo, N. Y.; Canton and Columbus, Ohio; Charleston, W. Va.; Cleveland, Ohio; Durham, N. C.; East St. Louis, Ill.; Glendale, Calif.; Grand Rapids, Mich. (toll board); Greensboro, N. C.; Hamilton, Ohio; Indianapolis, Ind.; Jackson, Mich.; Johnstown, Pa.; Kansas City, Mo.; Lancaster, Pa.; Long Beach and Los Angeles, Calif.; McKeesport, New Castle, Philadelphia and Pittsburgh, Pa.; Richmond, Va.; St. Louis, Mo.; Schenectady, N. Y.; Scranton, Pa.; Toledo, Ohio; Troy, N. Y.; Tulsa Okla.; Wilkesbarre, Pa., and Merriam Park, Minn. (toll board serving Minneapolis and St. Paul, Minn.)

Such a record of permanent development during the early years of the company was not only due to the men originally associated with Mr. Kellogg at Highland Park, but also to the additional group associated with him in the Green street plant. This list included such names as Harry G. Webster, Joseph B. Edwards, Charles S. Winston, J. C. Kelsey, Alfred H. Dyson, and Hiram D. Currier, who carried forward the sound principles in the development of the industry that had been formulated earlier at Highland Park.

At the Green street plant was developed the two-wire common battery multiple switchboard without grounds at the subscribers' stations. The making of

G. R. YANOCHOWSKI, President of the Kellogg Switchboard & Supply Co., Chicago, Ill.

receiver shells and terminals of bakelite was also one of these early developments. Later on appeared the feature switchboard containing flashing recall, non-interfering answering, and other features that condensed the size of the board and increased the calls that could be handled by operators over 100 percent. It was an easy task for operators to answer between 500 and 600 calls in the busy hour with this feature switchboard.

Straightforward trunking was another development that occurred at the Green street plant, by which the A operator was able to select not only an idle trunk, but also an idle operator at the distant office. When the A operator plugged into the outgoing trunk jack, she knew that she had selected not only an idle trunk, but also an operator who at that particular instant was idle, and would be able to give the call instant attention.

The straightforward trunking system greatly facilitated the completion of trunk calls, and reduced the number of errors that resulted from the overcrowded order-wire system previously used. The order-wire system was a cut-and-try proposition in which it was impossible at times to pass the call to the distant operator. It resulted in many errors in wrong numbers, due to the fact that the trunk to be used had to be assigned to the A operator by the B operator before the number could be passed.

Both the feature switchboard and the straightforward trunking system developed at the Green street plant were adopted extensively by the Bell System, particularly the straightforward trunking system which has completely superseded the previous order-wire system. Straightforward trunking was installed in all of its 6,000 exchanges within the space of two years after the Kellogg company's invention had been announced.

The Kellogg company's patent upon the non-interfering answering feature of its service switchboard, in a suit for infringement against the American Telephone & Telegraph Co. and the Michigan Bell Telephone Co., was sustained by Federal Judge Arthur J. Tuttle of the United States District Court, and the Bell System is now under permanent injunction not to use this feature. It was this non-interfering answering feature that gave the switchboard its speed in answering calls, resulting in a saving in equipment, and a reduction of almost one-half in the operating expense.

In the infringement suits against the same defendants upon the straightforward trunking patents, the Kellogg

J. G. KELLOGG, Vice-President and Secretary of Kellogg Company.

company's claims were held invalid, and those cases are now pending appeal in the United States Circuit Court of Appeals for the Sixth Circuit.

Very early in its organization the Kellogg company developed its efficient transmitter in which the carbon granule cup is carried by the diaphragm, thus causing the carbon granules to vibrate bodily in response to the voice waves. This construction served to prevent packing and was very efficient. It was the invention of W. W. Dean.

Mr. Dean also contributed to the Kellogg development many other notable inventions. Among these was the harmonic four-party-line ringing system. This consisted of bridged harmonic ringers with no grounds at the substations, operated by frequencies with which the tappers of the ringers were synchronized, and operating off of a

G. R. EATON,
Chief Engineer of the Kellogg Company

ringing machine governor controlled to maintain those frequencies. This development was followed by pole-changers for the smaller exchanges.

The Kellogg company was the first to produce in this country the handset or cradle type telephone. The first Kellogg instrument of this type was brought out in 1905, and was manufactured by the Kellogg company for many years before any other cradle type telephone appeared. Those were the days of the silent movies, and the unique appearance in the pictures of the Kellogg company's hand telephone created a great demand for them in the movie colony at Hollywood.

In more recent years the Kellogg Switchboard & Supply Co. was the first to make the hand telephone non-positional, so that regardless of the position a movie star or any other subscriber found himself—whether lying upon a couch, or leaning back in his office chair

H. E. BILLINGTON, General Sales Manager of Kellogg Company.

—a uniform resistance in the carbon granule cup was maintained. This resulted in a uniformly efficient output in voice waves, and the efficiency curve

America's First Handset — the Kellogg Grabaphone—Made its Appearance in 1905.

of the transmitter was uniform, no matter what position the subscriber might be in while talking over the telephone.

Active in the Kellogg company for

The New Combination Masterphone—Kellogg's Latest Offering to the Telephone Industry.

many years was Leroy D. Kellogg, who was at one time its president, and Seymour Guthrie, for many years its secretary and treasurer. James G. Kellogg, the second son of the founder of the company, is still active as its secretary. Preceding the election of George A. Yanochowski as its president, W. L. Jacoby filled that position for about three years, succeeding J. B. Edwards.

From 1902 to 1909 the Kellogg company was owned by the Western Electric Co., during which period W. L. De Wolf was its chief executive. Litigation ensued as a result of this purchase by the Bell company, and Milo G. Kellogg recovered the company from it after protracted litigation. But even during this period of its ownership by the Bell interests, the company was an Independent organization, and engaged

R. B. MILES, Western Manager, Telephone Division.

in the development and manufacture of apparatus for Independent operating companies.

But, in 1902 there was intense sentiment and partisanship between the Bell and Independent companies. They had not learned the lessons of compromise and cooperation at that date. Bell connecting companies were scarce, and competition for subscribers with dual service in many places was the vogue. It was in such an environment that the news of the Kellogg sale to the Bell interests, which was kept secret for a time, became known.

Milo G. Kellogg had gone to California on account of his health but he promptly returned and began negotiations, and subsequently litigation under the direction of the genial and able Judge R. S. Taylor, of Fort Wayne, Ind., to recover his company from the Bell.

The sale had far repercussions. W. W. Dean, and several others of the leading

men in the Kellogg organization retired from the company to organize the Dean Electric Co. of Elyria, Ohio. During the years of litigation that followed, the Kellogg sales organization had to stem a stubborn tide of sentiment against it. With a line of apparatus of less stability and reputation they would have had a serious time of it.

Francis W. Dunbar was very active with Milo G. Kellogg in the fight to repossess the company for the benefit of the Independent field. He hired his own attorney, Charles H. Aldrich, a former Solicitor General of the United States, and filed a cross bill in the Milo G. Kellogg suit as a minority stockholder in the company. The case was tried twice in the lower court and heard twice by the Illinois Supreme Court before the company was finally returned to Mr. Kellogg. This was in 1909, seven years after the sale.

A. D. BOAL, Manager,
Apparatus Sales Department.

A. PARLETT, JR.,
Industrial Sales Manager.

These were seven years of anxiety, litigation, and expense for Mr. Kellogg, but that did not prevent his innate aggressiveness from manifesting itself in further developments during the years that the litigation was pending. During the whole of that time Mr. Kellogg maintained a well-equipped laboratory with a corps of inventors and engineers on West Jackson boulevard, in Chicago, and continued without interruption during the entire period the development of new inventions in manual semi-automatic and automatic systems.

Some of the most important inventions in telephony were made in Mr. Kellogg's laboratory while he was fighting to recover possession of his company. When he did recover it in 1909, he assigned all of those inventions to the Kellogg company for the benefit of its stockholders without any compensation therefor. The company did not pay any part of the very great expense of that development.

Mr. Kellogg performed two other notable services for the benefit of Independent telephony generally. One was the defeat of a number of pending bills in Congress at the time the Bell patents were about to expire. These bills were designed to extend the life of United States patents, so that they would not be limited in their duration by the expiration of foreign patents. The effect of these bills if they had been enacted into law, would have been to leave the Bell organization once more in undisputed possession of the telephone business of the country for many years.

The other thing that Mr. Kellogg was principally instrumental in accomplishing, was the defeat of the Berliner transmitter patent. This patent had been applied for in 1877, but had been kept pending by the Bell company in the United States Patent Office for 14 years, and was not issued until 1891.

There is many a romance in the development of Independent telephony and in its fight for a place in the territory that for many years had belonged exclusively to the Bell company. There is none with more of human interest than the courageous struggle against tremendous odds that was successfully carried on by Milo G. Kellogg.

In 1915 the Green street plant in its turn became too small for the Kellogg company and it moved into the present factory building at 1066 West Adams street, Chicago. It was originally a four-story and basement mill construction building with 374,500 square feet of floor space. This later proved too small, and in a few years a six-story and basement addition, containing 100,000 square feet of floor space was added. These combined buildings are the present home of the company.

F. M. PARSONS, Manager,
Switchboard Sales Department.

M. A. BELLION, Manager
Supply Sales Department.

Under the direction of the present management, and during the course of the depression the Kellogg company has been active in developing an entirely new line of apparatus. These include new and improved switchboards, and new telephone instruments including combination sets made of bakelite. These are made of a minimum size with an efficient sound-projecting, small-sized ringer in both the wall set telephone and the desk set.

Today, the Kellogg Switchboard & Supply Co. is a strictly Independent manufacturing company, devoting its entire energies to the development, manufacture and sale of telephone equipment for the Independent telephone industry.

Leich Electric Co.

IN THE nearly 40 years of its existence, the Leich Electric Co. of Genoa, Ill., has made some very outstanding contributions to the progress of telephone communication. Originally the Eureka Electric Co., with the factory at McCordsville, Ind., its successor, the Cracraft-Leich Electric Co., was taken over by the Leich Electric Co. in 1917. Dating back prior to 1898, the company is one of the oldest Independent manufacturers now in existence.

The first vibrating ringing converter to operate from 60-cycle, alternating ringing current was developed by the Leich Electric Co., it is claimed. Thousands of these ringing converters are in use in telephone exchanges throughout the United States. The company is also well known for its harmonic ringing equipment which is used in connection with both manual and automatic switchboards.

Many of the contributions of the company were originated by the late Oscar M. Leich, for 28 years affiliated with the organization. He is credited with originating and designing the two-frequency, four-party selective ringing system, the Automaphone (a magneto telephone with battery signaling) and the pulsating current magneto harmonic system, in addition to designing transmitters, receivers, drops, relays and telephones.

The pulsating harmonic system, referred to, involves the so-called trickle charging; in other words, charging a storage battery at a low rate by means of a vibrating rectifier and using current from the battery to operate a ringing vibrator to produce ringing current through a transformer. This application by the Leich company led to the trickle charging of storage batteries along railroad systems for the operation of signals.

A. C. Reid, who succeeded Mr. Leich as general manager of the company shortly after the latter's demise in the spring of 1935, has been in charge of the engineering and development of equipment for more than a decade. Under his direction, the Leich company has made numerous improvements to its well-known and widely-used line of telephones, magneto switchboards, and ringing equipment.

Mr. Reid has been engaged in the manufacturing end of the telephone business for a third of a century. His first experience was with the Stromberg-Carlson Telephone Mfg. Co., of Rochester, N. Y., first in the cable and laboratory departments and later as equipment engineer. When the Cracraft-Leich Electric Co. was organized in 1907 to take over the Eureka Electric Co. (which had absorbed the Advance Electric Co a few years previously), Mr. Reid became assistant to Oscar M. Leich, who was in active charge of the partnership as then constituted, later taking over the responsibilities of chief engineer and sales manager. From 1912 until his death last year, Mr. Leich served as secretary and general manager of the company.

In more recent years Mr. Reid has devoted his time to engineering and development of equipment. His appointment in 1935 as general manager assures the many friends and patrons of the company of a continuation of its aggressive development of telephone equipment to meet the growing demand for communication service of an ever-rising standard of speed and efficiency.

The present chief engineer of the Leich Electric Co. is Harold M. McCreary. His appointment to that important post was announced early this year. After graduating from the University of Nebraska with the degree of electrical engineer and taking considerable post-graduate work, Mr. McCreary served for two years as chief engineer for the Chicago Television and Research Laboratories. He also served as research and development engineer for the Automatic Electric Co., for three years and as inspection methods development engineer for the Western Electric Co. for more than two years.

Mr. McCreary holds more than 14 patents on communications inventions and has a number of others on file in the United States Patent Office. Among the most noteworthy patents granted to him is No. 2,013,162 on television. This was the first patent application filed which discloses a mosaic structure for a cathode ray television transmitter.

W. C. Rosenfeld is the company's credit manager and purchasing agent. C. E. Senska is superintendent of assembling and J. G. Forsyth has charge of the Leich tool making and manufacturing departments.

C. M. Bowling is the traveling representative of the company in the states of Indiana, Ohio and Michigan. His headquarters are at Richmond, Ind. John A. Campbell, working out of Genoa, represents the company in Illinois, Iowa, Missouri and Wisconsin. Both of these men have had many years of experience in the operating as well as manufacturing branches of telephone work.

Mr. Bowling's first experience in tele-

Modern, Daylight Factory of the Leich Electric Co., at Genoa, Ill., Is Only a Few Hours' Ride from Chicago.

phone work was in 1898 as groundman for the Shawnee Telephone Co., of Stone Bluff, Ind., shortly after graduating from the local high school. After varied experience with other small companies in Indiana, he was employed by the Hoopeston (Ill.) Telephone Co. in 1905. During his seven years with that company, he superintended the conversion of the plant from magneto to common battery operation.

Severing his connections with the Hoopeston company, late in 1912, Mr. Bowling became a traveling representative of the Kellogg Switchboard & Supply Co. Some five years later he returned to the operating end of the telephone business as district manager for the National Telephone & Electric Co., of Clinton, Ill. He again left the operating field and is now sales representative for the Leich Electric Co. in Indiana, Ohio and Michigan, as mentioned previously.

HAROLD M. McCREARY, Chief Engineer of Leich Electric Co., Has Had Considerable Experience in Communications Engineering and Has Patented 14 of His Inventions.

Mr. Campbell's telephone experience dates back to 1903, when he was engaged as a lineman for the Winona Telephone Co., of Winamac, Ind. Six years later he became assistant manager of the company. He resigned from that position in 1914 to become Indiana sales representative for the Kellogg Switchboard & Supply Co. Later he became Ohio representative for the Leich Electric Co. and in 1928 became switchboard engineer at its factory in Genoa, Ill. In 1931 Mr. Campbell joined the sales staff of the American Electric Co., but he is again with the Leich Electric Co., representing the company in the states of Illinois, Iowa, Missouri and Wisconsin.

In addition to its complete line of magneto telephone switchboards, modern and self-contained wall or desk type of instruments for common battery or magneto service, ringing and testing equipment and accessory equipment, the company also manufactures railroad signal relays and relays used in electronics.

The Leich company claims to be the first Independent manufacturer to present a handset telephone which combined the features of an anti-side tone booster circuit transmitter with submerged electrodes and cone-shaped diaphragm with high frequency response and to replace the old candlestick design telephone set with a modern design handset.

The company is proud of its modern factory which is only a few hours' drive from Chicago and welcomes visitors interested in telephone equipment.

A. C. REID, General Manager, Has Been in Charge of Engineering and Development of Leich Equipment for Ten Years.

C. E. SENSKA, Superintendent of Assembling in the Factory of the Leich Electric Co. in Genoa, Ill.

JOHN A. CAMPBELL, Who Represents Leich in Illinois, Iowa, Missouri, Wisconsin.

W. C. ROSENFELD, Credit Manager and Purchasing Agent.

J. G. FORSYTH Has Charge of Tool Making and Manufacturing.

C. M. BOWLING, Representative of the Leich Electric Co. in Indiana, Ohio and Michigan.

North Electric Mfg. Co.

MORE than 50 years ago—in 1884 to be exact—Charles N. North and George W. Drumheller established a shop for the repair and manufacture of telephone equipment in Cleveland, Ohio, doing business under the firm name of Drumheller & North. This shop was the beginning of the present North Electric Mfg. Co. Mr. North and Mr. Drumheller undertook the venture after several years of experience in telephone operating company work. Bringing, as they did, a broad practical experience to the problems of telephone equipment manufacture, the firm's products immediately achieved a place in the field.

In 1889 the firm name was changed to the North Electric Works. In 1899 the business was incorporated as the North Electric Co. In 1918 the name was changed to the North Electric Mfg. Co., consequent to the reorganization of the company which took place at that time.

Mr. North remained associated with the firm and its successor companies until his death in 1926. Due to declining health, however, he retired from the presidency of the North Electric company in 1921. His gradual withdrawal from active work during the last years of his life was a distinct loss to the art of telephony and to his host of friends.

Mr. North was succeeded in the presidency of the company by F. R. McBerty who had, shortly before, relinquished the post of European chief engineer of the Western Electric Co. to participate in the reorganization of the North company. Consequently, since its beginning, the direction of the company's affairs has been in the hands of but two men.

Two-Position Automanual Toll Board Recently Installed at Lorain, Ohio. Completion Installation Will Consist of Eight Toll Positions.

Mr. McBerty's association with the Western Electric Co. dated from 1887, and his long and active career had included a very close connection with the development of automatic telephone switchgear. He had designed and brought to completion the so-called McBerty rotary system, which was one of the earliest and still ranks as one of the principal automatic telephone systems in the world.

As the North company had concentrated on the manufacture of automatic and semi-automatic equipment for years, the choice of Mr. McBerty for the presidency was singularly opportune, as he brought to the company a breadth of experience and a program of development which permitted it to hold the position that had been achieved.

One of the first tasks which faced Mr. McBerty on the business side was the simplification of the capital structure, and a reduction of the funded indebtedness. In the 15 years that have elapsed since he assumed the presidency this has been accomplished. The capital structure consisted, in the reorganized company, of first preferred 8 per cent cumulative stock, second preferred 6 per cent non-cumulative stock, and common stock. The funded debt consisted of a bond issue of $500,000.

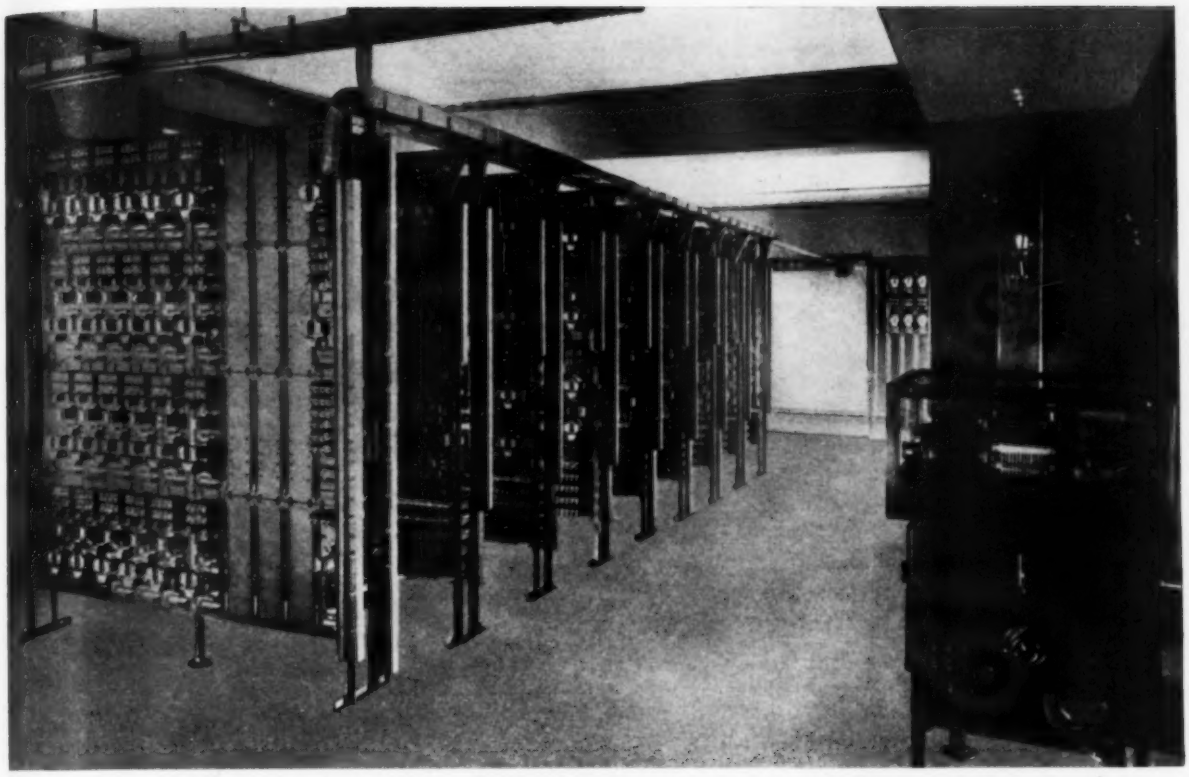
By interchange of stock, the entire outstanding preferred stock, of both classes, was retired. The entire capitalization of the company now consists of 23,100 shares of no par common stock. A majority of the bonds of the company was purchased by the company treasury in the open market at a premium. In 1931, when the bonds matured, the entire issue was retired without recourse to new financing.

The completion of this financial program placed the North company in a position of stability and security. The operation was carried on out of the company's earnings and left the company entirely free from debt, other than short-term current items, and with ample working capital.

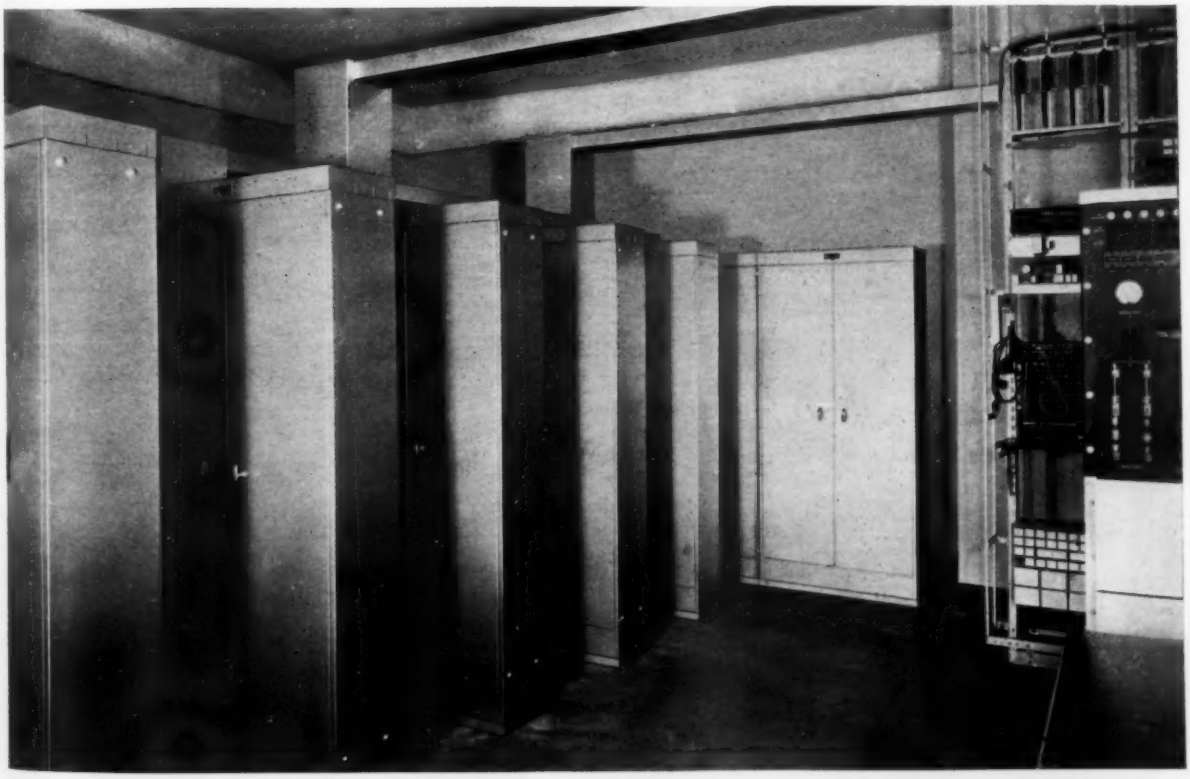
The North company owns one of the groups of patents which dominate the field of automatic telephony in the United States. Some of its patents are claimed to be of primary importance. In 1921 the North company entered into an exchange of licenses with the two other holders of groups of patents in automatic telephony — Automatic Electric Co. and Western Electric Co. This arrangement, in addition to financial benefit, gave it complete freedom to manufacture its various types of auto-

F. R. McBERTY Has Directed the Affairs of the Company Since the Late Mr. North's Retirement.

CHARLES H. NORTH (Deceased) Founder and First President of the Company.



North Automanual Exchange Installed at Greensburg, Ind., in 1911, Replacing a North Manual Switchboard.



North All-Relay Dial Automatic Exchange Installed at Greensburg, Ind., in 1936, Replacing a North Automanual Equipment.

matic telephone exchanges and allied apparatus.

The direction of development and design, which Mr. McBerty undertook when he joined the North company, was continued by him as president. A principal activity was the completion of the design of the All-Relay type of automatic switchboard, and the enlarging of its field of use.

Greater emphasis was given to the dial automatic system of the North company, due to the tendency in the field; and a program of improvement of the automanual equipment was inaugurated.

The 800 All-Relay switchboards which are now in service throughout the world are the result of the impetus which was given to All-Relay equipment development.

The wide range of automatic telephone and signal switchgear manufactured by the North Electric Mfg. Co. is well known. Besides the dial automatic and automanual systems, it includes semi-automatic toll boards, remote control switchboards, stock market quotation equipment and supervisory systems for power networks.

The dial All-Relay equipment has been installed in many exchanges throughout the country in both small and large units. An example of the latter type is the recent installation at Greensburg, Ind., where some 1,600 subscribers are served.

The automanual exchanges in Galesburg, Ill., and Fort Dodge, Iowa, have been in service for a number of years, while only recently an automanual toll board was placed in service at Lorain, Ohio. North All-Relay exchanges are operated in several networks in Ohio. Some of the exchanges are of the "remote-control" type; others have satellite equipment (without dials), while others are dial exchanges of the All-Relay type. Many of these exchanges are connected in networks to one or more exchanges for automatic toll service through North semi-automatic toll switchboards.

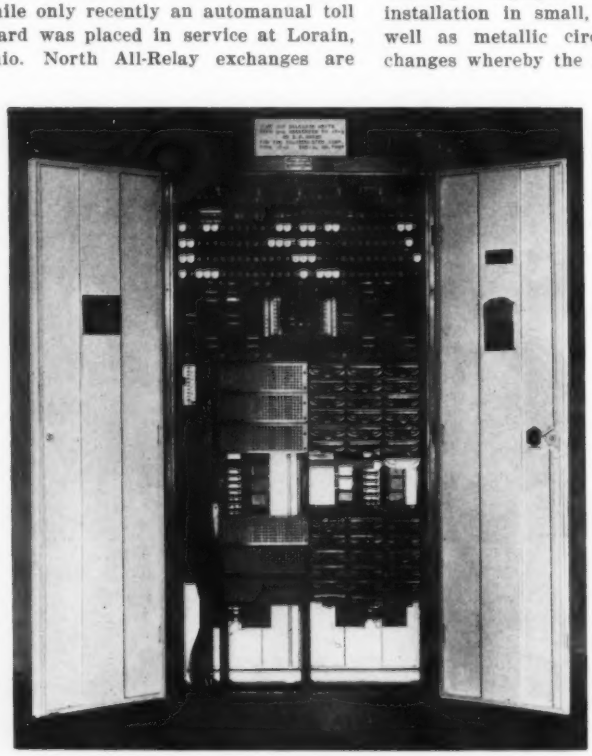
View of Toll Operating Room of Lorain Telephone Co., at Lorain, Ohio, Showing Two of the Ultimate Eight Positions of All-Relay Automanual Toll Equipment in Actual Service.

In developing the All-Relay exchange equipment the company gave special attention to the problems of the small exchange. Equipment was produced for installation in small, grounded-line as well as metallic circuit magneto exchanges whereby the change to a modern type of switching equipment could be made with little change in outside plant and subscriber station equipment. In such cases, it is planned to rehabilitate the outside plant and change to modern subscribers' equipment as soon as conditions warrant.

In addition to its telephone equipment, the North Electric Mfg. Co. manufactures its All-Relay type equipment for use in providing stock market quotations. Known as Teleregister, this equipment, upon installation, is connected to Western Union leased wires for providing market quotations in offices of stock brokers.

Another use of the All-Relay exchange equipment is for the remote control of large power stations and systems. Under its contracts with the North company the Westinghouse company has installed and placed in operation on power systems several hundred of these North All-Relay exchange equipments.

The factory, owned and occupied by the North company in Galion, Ohio, was built in 1912 when the company's operations were moved from Cleveland.



View to Left Shows Teleregister Equipment for the Automatic Recording of Stock Market Quotations. Below Is Seen a Typical Recent North All-Relay Installation at DeGraff, Ohio.

Stromberg-Carlson Telephone Mfg. Co.

THE HISTORY of the Stromberg-Carlson Telephone Mfg. Co. dates back to the beginning of the Independent telephone movement in the United States. It was in 1894, just as the original basic telephone patents had expired, that Alfred Stromberg and Androv Carlson formed a partnership to build telephone apparatus.

Both of these men came from Sweden and Mr. Stromberg had had some experience in the famous Erickson telephone plants in that country. Both men added to their experience by engaging in telephone work in Chicago shortly after their arrival in this country. After raising $500 each to put into the new venture, they started a little shop which prospered surprisingly.

In 1895 the Stromberg-Carlson Telephone Mfg. Co., an Illinois corporation with the same name as the present company, was formed. The new company then went through several uncertain and doubtful years during which it seemed impossible that it would survive. However, in 1899 the Home Telephone Co. of Rochester, N. Y., predecessor of the Rochester Telephone Corp., entered into a contract with the Stromberg-Carlson company for first units of its switchboard.

The equipment furnished gave satisfaction to the operating company and the public upon its installation in 1900 and a year or so later the organizers of the Home company, wishing to be sure of a constant source of supply in the face of certain mergers then occurring, took control of the Stromberg-Carlson Telephone Mfg. Co. to Rochester and made it what it still is today—a Rochester-owned-and-managed institution.

With its removal to Rochester and the opening up of a new manufacturing line—underground and aerial cable—the Stromberg-Carlson company entered on an era of increased activity and prosperity. Then came a general slump in the telephone business of the country and Stromberg-Carlson's business fell off. In 1914, however, the company was reorganized with the same name, and

The Late W. ROY McCANNE, for More Than a Quarter-Century Directing Head of Stromberg-Carlson, Was Largely Responsible for Its Present Excellent Position as One of the Leading Telephone and Radio Manufacturers.

from that time on its success has been steady and rapid.

For more than 40 years the Stromberg-Carlson Telephone Mfg. Co. has been engaged in the manufacture of telephones, telephone switchboards and miscellaneous telephone apparatus.

In 1929 the company moved into its present quarters occupying nearly ten acres of a 43-acre parcel of land in Rochester owned by the company. The main plant consists of a one-story "daylight" building located on the west side of Carlson Road, with a frontage of 640 feet and a depth of 470 feet. This building is divided into four sections by three fire walls running east and west. There is a total of 360,000 square feet of floor space in the building.

Many facilities for the comfort and recreation of employes have been included in the plant—a cafeteria accommodating approximately 1,100 employes, at one time well-equipped recreation fields, ample inside and outside parking for automobiles, etc.

A double track railroad siding connects the main line of the New York Central Railroad to a reinforced, covered, loading platform which extends the entire west side of the building. Rails for transfer cars connect this loading platform with the lumber dry kilns and inside lumber seasoning spaces.

In all of this progress and growth, the late W. Roy McCanne was active. During the last 20 years of his life—from 1914 to 1934—Mr. McCanne built an organization and manufacturing plant that attained high standards of cooperation and performance. The impetus given Stromberg-Carlson by this able and greatly beloved leader was such as to establish it on a firm foundation with the organization and ability to cope successfully with the requirements of the times—present and future.

The achievements of Stromberg-Carlson in developing new equipment and apparatus rank high on the records of Independent telephony, as does also its reputation for producing quality products.

Since its inception the Stromberg-Carlson company has been responsible for many developments in telephone equipment. Its laboratories, under the direction of capable engineers, have always endeavored to meet the requirements of changing telephone conditions.

Since the earliest days the company has manufactured equipment for large or small exchanges. Switchboards of

New and Modern Plant and Offices of the Stromberg-Carlson Telephone Mfg. Co. in Rochester, N. Y.

various types and sizes have been developed and adopted for all classes of telephone service. Main distributing frames, relay racks, power units, ringing machines, and all other items necessary for complete central office equipment have been produced by Stromberg-Carlson.

For the subscriber's premises the company has been particularly active in the manufacture of apparatus, from simple subscriber sets to private branch exchange equipment. Some of the latter is of relatively simple type, or it may be of a more complex nature such as the multiple boards that have been installed in industrial plants and public institutions throughout the country.

The Stromberg-Carlson company has done a lot of pioneering work and has made a number of contributions to the telephone art. Among the items in which the company has pioneered are the development of a line of standardized magneto switchboards, a line of standardized private branch exchange switchboards, the self-contained, or one-piece, handset telephone, and the "super-service" method of station selection in connection with multi-party-line service.

In the development of standardized magneto switchboards the company took a bold step because, prior to the development of this standardized board, practically every magneto switchboard, large or small, was a "tailor-made" proposition. This was an expensive method to pursue and quite invariably resulted in delayed delivery.

The company's engineering and sales forces concluded that it would be altogether practicable to develop a line of standardized magneto switchboards to be carried in stock so that purchasers need not wait for the completion of engineering plans and the subsequent construction of their respective switchboards.

In order to meet all possible practical requirements this standardized magneto switchboard was designed to be wired for the ultimate capacity of the section and to have all the cord circuits equipped with repeating coils—something which at the time was rarely being done in any switchboard. Quite generally only a portion of the entire number of cord circuits of a magneto switchboard were equipped with repeating coils.

Another development, which constituted a marked step in advanced design, was the mounting of repeating coils and condensers on steel mounting strips attached to angle iron details in the rear of the switchboard cabinet.

These boards, arranged for shipment from stock, were designed to be carried in three sizes or groups of equipment with provision made for the ready installation of additional apparatus units in case a stock size of switchboard did not quite meet the requirements of a given installation.

The line of standardized private branch exchange switchboards was developed along much the same lines; that is, with certain standard groupings of apparatus units installed in each of the various size cabinets with provision made for quick installation of additional line, cord circuit, and trunk circuit units.

In connection with the trunk circuit design a most unique layout was adopted. All the apparatus for a given trunk circuit is mounted on one relay mounting plate with all the connections wired to a terminal strip where, through the medium of a removable shoe, the trunk

No. 1191 Self-Contained Stromberg-Carlson Handset.

circuit apparatus can be quickly connected to, or disconnected from, the trunk circuit wiring. This makes possible the easy addition or removal of trunk circuit equipment, since no soldering tools are necessary to either install or remove the trunk circuit plates.

This same idea of a quick detachable shoe connection has been used in many installations in connection with the cord circuit apparatus plates of the main switchboard circuits. Many of the "super-service" installations made by Stromberg-Carlson incorporate this quick detachable shoe connection idea, notably where the cord circuit apparatus is mounted outside the switchboard section.

The "super-service" method of party-line selection referred to in an earlier paragraph makes possible the complete elimination of individual party-line keys on the keyshelf of the switchboard. One set of simple push-button type keys —one for each frequency or party-line designation—is all of the keyshelf equipment required for the proper control of an entire position's cord circuit equipment.

Relays in each of the cord circuits which are associated with this master party-line selecting key arrangement during the brief period that the operator is in on a cord circuit in connection with the establishment of a connection, take the place of the individual party-line keys in the cord circuit and perform similar functions in party-line selection. Located remote from the keyshelf under dust-proof covers these relays continue to perform their frequency-selecting function, free from the dangers of breakage or maladjustment to which keys on the keyshelf of the switchboard are so often exposed.

With these super-service party-line-station selecting keys go other features which distinguish the "super-service" method of operation from many other "feature" switchboards. These associated items include dark keyshelf, flashing recall, instantaneous tripping of the ringing, automatic operator's cut-in, operator's bar (constituting the so-called secret service) and automatic peg count.

Several years ago the Stromberg-Carlson company's engineers conceived the idea of a self-contained, one-piece, common battery handset. In working out this idea they drew upon the latest developments in the production of new and efficient metals and also, in connection with the Eastman Kodak Co., developed the use of Tenite, a new resilient molded material which has proven to be an unusually satisfactory material for the construction of telephone instruments.

Tenite is especially valuable in the production of colored telephones so that Stromberg-Carlson handset telephones can now be obtained in a variety of pleasing colors.

In the development of their new handset telephone the company's engineers pioneered in the design and manufacture of an entirely new type of transmitter. In this design completely new ideas were followed which have been found to be very sound. As a result of the adoption of these improved designs a transmitter approaching the ultimate in non-positional type has been made possible.

The efficiency of this transmitter is such as to warrant its promotion by the manufacturer for use as a close-speaking microphone in connection with paging systems and other voice amplifying installations where the range of pickup and amplification possessed by a good broadcast type microphone is not required.

One of the recent Stromberg-Carlson developments in subscriber premises equipment is a multiple line key turret, an extremely flexible system much favored by sales offices and newspapers

Co-Founders of the Firm Which Today Bears Their Name: (Left) ALFRED STROMBERG and (Right) ANDROV CARLSON

WESLEY M. ANGLE, President of the Stromberg-Carlson Telephone Mfg. Co.

GEORGE A. SCOVILLE, Vice-President and General Manager.

DR. R. H. MANSON, Vice-President and Chief Engineer.

BEN WOODBURY, Telephone Sales Manager.

E. A. REINKE, Commercial Sales Manager.

E. A. HANOVER, Vice-President in Charge of Production.

where a large number of calls must be handled. Each station has a small, very compact switchboard and telephone. Any person answering an incoming call transfers the call to the station of the person being summoned. This station has been so designed that it is subject to expansion and revision so as to grow with the needs of the users.

H. T. McCAIG, Manager of the Chicago Division of the Stromberg-Carlson Telephone Mfg. Co.

This subscriber premises equipment is particularly adapted to intercepting service and finds its application where an attendant always on duty can answer a call on the line of any telephone user in the system, who may be absent from his station.

Another field in which the company has pioneered is in the development and introduction to the telephone fraternity of a light angle iron and channel iron knockdown type multiple switchboard section. The introduction of this section has done much to lower transoprtation costs as well as the initial apparatus costs of many switchboards.

In recent years the Stromberg-Carlson company has made contributions to the telephone art and to progress in the industry by assuming the obligation of being exclusive distributor to the trade for certain types of equipment material or apparatus. In assuming such a responsibility the company recognized the need of continuous contact with buyers in the telephone field. Carrying out this policy the company has in recent years carried a stock of line and construction materials at seven points throughout the country.

The Kansas City branch office of the Stromberg-Carlson is in charge of A. J. Roberts, a pioneer in the telephone industry. He is assisted by C. D. Kinne. "Cy," as he is called, is known to a host of telephone people, especially in the Kansas City territory.

H. T. McCaig, who last February rounded out 25 years' connections with the Stromberg-Carlson company, is manager of the Chicago division of the company. Like "Cy" Kinne, "Mac" is known to most of the telephone fraternity in the Central West. His office serves the territory embraced by the states of North and South Dakota, Minnesota, Wisconsin, Iowa, Illinois, Indiana and Michigan.

Stromberg-Carlson has for a number of years operated a Canadian manufacturing division under the direction of N. W. Baldwin, with headquarters in Toronto, Ont. This plant serves all the company's Canadian customers and many of its overseas' accounts. The Canadian division is a separate corporation operating under the name of Stromberg-Carlson Telephone Mfg. Co. of Canada, Ltd.

An Australian division operating under the name, Stromberg-Carlson Telephone Manufacturing Company of Australia, Limited, serves customers in the Antipodes.

On the Pacific Coast a branch office in San Francisco, Calif., under the supervision of F. K. Cannon, handles sales and shipments in that section.

Since the Stromberg-Carlson company's entry into the field of radio manufacturing, it has made many important contributions to that industry, several of which have been reflected back into the telephone industry. Notable advancements in fidelity of audi-frequency reproduction have been made. These improvements have been incorporated in the latest designs of telephone equipment.

The first chassis-assembly radios were produced by Stromberg-Carlson. These incorporated telephone-cable wiring—a direct effect of the telephone influence upon radio receiver design.

Stromberg-Carlson owns and operates radio station WHAM, a 50,000-watt transmitter operating on one of the few clear channels existing today. It is a high-fidelity station, which is particularly interesting because there are relatively few of the stations in the country.

The transmitter of WHAM is located near the small town of Victor, N. Y., approximately 30 miles distant from Rochester. A high-fidelity telephone line connects the transmitter with the main studios located in the Sagamore Hotel and the Eastman School of Music in Rochester.

The name and reputation which is handed down from one year to another and from one employe to another is zealously guarded by members of the Stromberg-Carlson organization. The men and women of the Stromberg-Carlson organization are known to have keen interest in the plans and programs of the company's customers.

Typical Stromberg-Carlson PBX Switchboard, the No. 101.